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THE RESPONSE TO THE THERAPEUTIC APPLICATION OF EXTERNAL HEAT *

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AND
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PHILADELPHIA

In a recent contribution there were reported the results of studies on the blood gases and the blood flow in arthritis, and on the nature of the response to external heat.[1] The present contribution reports a continuation of these studies, together with certain other matters arising out of them.

There has long been a widespread impression among medical men as well as laymen that rheumatism and arthritis are often accompanied by an acid sweat. There are few, if any, records in the literature, however, of attempts to establish this by modern methods. In the effort to obtain accurate data on the subject and at the same time to ascertain what physiologic changes accompany the beneficial effects of bakes, hot packs and similar methods of treatment, a series of studies has been carried on in this connection on normal and arthritic persons.

Bazett and Haldane[2] have shown that subjects immersed to the neck in a bath at 38 C. experience a rise in body temperature accompanied by hyperpnea, giddiness and faintness; they also noted a fall in the alveolar carbon dioxid, a profuse alkaline sweat and a marked alkaline diuresis. This alkaline wave they compare to the changes occurring after voluntary forced breathing. Haggard[3] has observed a drop in alveolar carbon dioxid with increased temperature in a person immersed for twenty minutes in a bath at 40 C. He observed a fall in the dissolved carbon dioxid but no change in the carbon dioxid combining power of the blood, and deduces that the concentration of hydrogen ion (C_H) of the blood must be presumably lowered. Pemberton, Hendrix and Crouter[1] have observed a similar fall in alveolar carbon dioxid in normal and arthritic persons subjected to "electric bakes"; and a rise above normal in alveolar carbon dioxid after the bake in nearly every instance. In eight cases the carbon dioxid combining power of the blood was determined before, during and after the bake; and the stability reported by Haggard in this respect was not encountered, there being considerable fluctuation in both directions.

There is also a paucity of references in the literature bearing on studies by modern methods on the reaction of the sweat and the changes, if any, which it may undergo. Thus, Talbert[4] has reached the conclusion that all sweat is acid. Kittsteiner[5] found varying degrees of acidity in sweat from different parts of the body. On the other hand, Bazett and Haldane report an alkaline sweat, as just mentioned. There were therefore undertaken on normal and on arthritic persons a series of observations, which included the p_H of the sweat during the bake; the p_H of the urine before and after the bake, and the p_H of the saliva before and after the bake, together with observations in some instances on the percentage oxygen saturation and the carbon dioxid content of the blood.

The bakes were given in the usual manner, lasting from a half to one hour according to the rapidity with which the subjects started sweating. The body temperature and bake temperature were taken at ten minute intervals, and the time of the first appearance of sweat, as well as that of the subsequent samples obtained, was noted. The forehead was cleansed with alcohol and ether to remove all traces of sebaceous material, and the sweat was taken up from it into carefully cleansed blood pipets such as are used for making red cell counts. These pipets were convenient, not only on account of their size and shape, but also because the small bore afforded something of a safeguard against subsequent evaporation and loss of carbon dioxid on standing.

In general, three samples were taken at five minute intervals, and the p_H value was obtained within half an hour, sometimes immediately, by Felton's[6] modification of Clark and Lub's indicator method. This requires only a drop of fluid, and is accurate to within 0.1 p_H. Samples of saliva and of urine were obtained just before and immediately after the bake, and the p_H was determined by the same method. The mouth of the subject was thoroughly rinsed before the experiment was started. The work of Starr[7] has indicated that the saliva acquires a reaction which is determined largely by the alveolar carbon dioxid in its passage through the mouth. He found that by collecting the saliva under oil, loss of carbon dioxid was prevented and a lower p_H value was obtained. In the present

* From the Laboratory of Clinical Chemistry, Presbyterian Hospital.

* Reported in outline before the Boston Orthopedic Association, March 20, 1922.
* The work here reported is part of a study on arthritis in collaboration with R. B. Osgood, M.D., Boston.
* The expense of the present investigation was defrayed by contributions from several sources, including a number of patients. Obligation should be particularly expressed for the gift of the late Mr. John H. McFadden.

1. Pemberton, Ralph; Hendrix, B. M., and Crouter, Caroline Y.: Studies in Arthritis: The Blood Gases and Blood Flow, J. Metabol. Res., to be published.
2. Bazett and Haldane: J. Physiol. **55**: iv, 1921.
3. Haggard, H. W.: J. Biol. Chem. **44**: 131 (Oct.) 1920.
4. Talbert, G. A.: Am. J. Physiol. **61**: 493 (Aug.) 1922; **50**: 433 (Dec.) 1919.
5. Kittsteiner, C.: Arch. Hyg. **74**: 275, 1913.
6. Felton, L. D.: J. Biol. Chem. **46**: 299 (April) 1921.
7. Starr, H. E.: J. Biol. Chem. **54**: 55 (Sept.) 1922.

investigation this precaution was not taken, and the specimen of saliva presumably came into equilibrium with the air. Since the alveolar carbon dioxid with which the saliva becomes equilibrated in the mouth is constantly fluctuating during and after the bake, the p_H of saliva in equilibrium with the air gives possibly a more constant basis of comparison.

The arthritic patients as a group had a very slightly more acid reaction in the urine, saliva and sweat than did the supposedly normal persons. It is of more interest, however, to note that during the course of the bakes in each group there is a decrease in the acidity of the urine, and a decrease in the acidity or increase in the alkalinity of the sweat as the result of the bake; but these changes are more marked and are nearly invariable in regard to the sweat. There is a tendency for the p_H of the saliva to move in the same direction in the normal persons but not in the arthritic patients. These changes are feebly reflected in the averages for the urines, and not at all in those of the saliva.

The percentage of normal persons showing this tendency to increased alkalinity in urine, saliva and sweat was greater than was the corresponding percentage

TABLE 1.—FINDINGS IN NORMAL PERSONS

Subjects * Normals	Type	Time After Temp. = 100 F. in Bake Before Sweat, Sample 1, Min.	Highest Body Temperature	Urine	Saliva	Sweat
1 ♂	Thin	30	98.3	6.6-7.2	6.2-7.2	5.6-6.9
2 ♂ (two)	Medium	33	99.1	5.4-5.6	7.4-7.6	7.7-8.0-8.0
3 ♂	Medium	45	99.2	5.9-6.2	7.3-7.4	7.9-8.0-8.1
4 ♂	Stocky	45	99.4	6.8-7.2	7.0-6.8	7.0-7.6-8.0
5 ♀	Stocky	30	100.6	7.6-6.6	7.2-6.4	7.6-7.8
6 ♂	Stocky	30	99.2	.....	7.6-7.0	7.4-7.8-7.8
7 ♂	Thin	10	100.1	5.0-5.2	7.4-7.6	6.6-7.8-8.0
8 ♂	Thin, nervous	33	99.3	.....	7.8-8.0	6.2-6.6
9 ♂	Normal, stocky	30	98.4	6.0-5.8	6.6-6.8	6.2-7.2-7.6
10 ♀	Medium	30	100.5	6.4-7.4	7.5-7.2	7.4-8.0-8.0
Average		31.6	99.4	6.2-6.4	7.2-7.2	7.0-7.6-7.9
Percentage becoming more alkaline				75%	60%	100%
Range				5.0-7.6	6.2-8.0	5.6-8.0

* Subjects who were men are indicated by the symbol ♂; women by ♀.

of arthritic persons in the ratios of 75, 60 and 100 to 70, 43 and 91 per cent.

There appears to be no direct relation between sweat alkalinity and either the height or the rate of rise of body temperature.

The difficulty of obtaining perfectly normal subjects was present here, as always, and there is some suggestion that in the cases of normal persons giving acid or less alkaline figures after the bake, there were departures from health in the way of focal infections, hay-fever, and the like. If these cases were eliminated, the contrast between the groups would become more striking, although, on the other hand, two marked arthritic patients gave distinctly alkaline sweat. Table 3 shows the changes in the sweat and urine as developed by a number of observations on the same person on varying diets during the course of electric bakes.

As far as we have searched the literature there is no record by modern methods of the difference between normal persons and arthritic patients which these figures suggest. It is also believed that the constant progressive change toward alkalinity or increased alkalinity of the sweat during the course of a bake shown by normal persons and by most arthritic patients has not been previously observed. It is of interest to note that two cases of arthritis giving extremely acid sweats (p_H 4.6) underwent no change in this respect during the bake, and in each case the ingestion of from 15 to 20 gm. of sodium bicarbonate before the bake in no way altered the reaction.

TABLE 2.—FINDINGS IN PATIENTS WITH ARTHRITIS

Subjects	Condition	Time After T = 100 F. Before Sweat, Sample 1, Min.	Highest Temperature	Urine	Saliva	Sweat
11 ♂ (15 bakes)	Active, chronic	10	99.1	6.0-6.1	7.3-6.9	6.4-7.3-7.5
12 ♂ (2 bakes)	Slightly active arthritis, thin	0	99.8	6.0-6.3	.....	7.1-7.4-7.8
13 ♀ (from foot, 6)	Chronic, thin	15	99.7	6.6-6.4	7.1-7.0	6.1-6.8
14 ♀ (5)	Medium	20	99.7	7.1-7.3	7.3-7.1	5.8-6.4
15 ♀ (5)	Medium, acute	20	99.6	5.2-5.6	6.4-6.5	5.7-7.2-7.4
16 ♀ (3)	Acute, thin	20	98.8	6.6-7.2	6.9-6.6	7.4-7.4
17 ♀ (2)	Chronic, thin	35	100.8	5.7-6.1	8.2-8.2	8.0-8.4-8.4
18 ♀ (2)	Acute, medium	35	100.3	7.0-7.2	7.2-7.2	7.4-8.0
19 ♀ (2)	Active, medium	25	100.4	6.0-5.9	6.3-6.2	7.5-7.9
20 ♂	Mild case (?), thin	25	100.2	5.0-5.0	6.6-6.8	7.4-8.0-8.2
21 ♂ (2)	Subacute (?)	10	99.2	6.1-6.6	6.2-6.4	4.6-4.6-4.7
22 ♀	Active, medium	25	101.4	6.2-7.0	6.2-6.4	6.0-7.6-8.0
23 ♂ (2)	Mild, medium	10	99.5	5.7-6.1	.....	7.3-7.9-8.1
24 ♀	Thin, acute	10	101.2	6.2-7.5	6.8-7.4	8.0-8.4-8.4
25 ♂ (2)	Medium, subacute	5	98.4	5.0-5.0	8.0-8.0	6.1-7.3-7.4
26 ♀	Subacute, thin	20	99.4	6.8-6.4	7.2-7.4	7.4-8.0
27 ♀	Thin, chronic	30	100.9	5.2-6.4	7.4-7.0	6.7-7.2
28 ♀	Stout, chronic	40	98.6	5.0-5.2	6.0-6.4	4.6-4.6
29 ♂	Stout, gout (?)	30	98.7	5.8-5.8	6.8-7.2	5.8-6.4-6.8
30 ♂	Acute	5	99.4	7.4-6.4	6.2-6.2	6.9-7.6-7.6
31 ♂	Severe ankylosis	5	102.0	6.6-7.6	6.2-6.2	7.4-7.6-7.6
32 ♂	Active (?)	15	99.5	4.6-4.6	7.1-7.1	6.8-7.2-7.4
33 ♂ (4)	Active	15	100.7	5.7-6.4	6.8-6.3	5.8-6.8-7.3
Average		18	99.8	6.0-6.3	6.9-6.9	6.6-7.2-7.5
Percentage becoming more alkaline				70	43	91
Range				4.6-7.6	6.0-8.0	4.6-8.4

With the aim of influencing the acid sweat, five patients with arthritis were given from 10 to 20 gm. of sodium bicarbonate within the hour preceding the bake; but in none of these cases was the change in p_H markedly greater than without the bicarbonate. Table 4 gives the results obtained.

The nature of the acidity of the sweat remains to be determined; but it may be due to carbon dioxid, some alpha-hydroxy acid, phosphoric acid or fatty acids elaborated by the sebaceous glands. The failure to influence the reaction of the sweat with sodium bicarbonate is perhaps suggestive of the last mentioned mechanism, but this evidence is by no means conclusive.

TABLE 3.—CHANGES IN ONE PERSON ON VARYING DIETS DURING BAKES

Date	Diet	p_H of Sweat Collected During Electric Bake	p_H of Urine Before Bake	p_H of Urine After Bake	Date of Bake
11/18-11/26	General	6.4-7.2	...	...	11/25
11/26-12/ 6	Graham crackers, milk, butter; total calories, 2,370	6.4-7.2 6.2-7.4	5.4	5.6	11/29 12/ 3
12/ 6-12/23	Graham crackers, milk, butter; total calories, 1,500	6.4-7.0 7.0-7.0	... ...	... ...	12/ 7 12/21
12/23- 1/ 1	General; total calories, 1,500	6.8-7.4 7.2-8.0 7.4-8.0	5.6 7.1 7.4	6.5 6.7 6.8	12/23 12/28 12/30
1/ 1- 1/ 7	Bread, milk; total calories, 1,430	5.6-7.4	5.6	5.8	1/ 5
1/ 7- 1/25	General	5.6-7.4 5.6-6.8 6.9-8.0	5.6 5.6 5.6	5.6 5.6 5.6	1/11 1/13 1/25

On the other hand, it is accepted that to some degree at least the sweat may play the rôle of an eliminative organ, and Ryffel and Barber [8] and others refer to the sweat glands as having the function of eliminating acids as well as certain other substances. According

8. Ryffel and Barber: Quart. J. Med. 13, No. 49 (Oct.) 1919.

to Starling,[9] "at a temperature of from 29 to 33 C., the carbon dioxid output by the skin is about 0.35 gm. an hour, i. e., about 8.4 gm. in the twenty-four hours. When the external temperature rises above 33 C., the carbon dioxid output increases so that at 34 it is doubled and at 38.5 it may mount to as much as 1.2 gm. an hour (Schierbeck). It is just at this temperature of 33 C. that a secretion of sweat begins to be noticeable; so it has been suggested that the increased carbon dioxid output may be due directly to the increased work and metabolism of the sweat glands during their activity."

It is conceivable that a decrease in acidity during a bake, as noted above, may be due to a large initial and lower subsequent output of carbon dioxid and Pemberton, Hendrix and Crouter [1] have suggested that part of the benefit of bakes in arthritis and, indeed, in certain other conditions, may be due to the heightened carbon dioxid output. There is no suggestion from the appearance of the various samples of sweat during a bake that sebaceous matter and fatty acids play an important rôle. Again, the increased alkalinity may be due to an "alkaline wave" resulting from the bake. The question is being further studied.

TABLE 4.—RESULTS OF GIVING SODIUM BICARBONATE PRECEDING BAKE *

Subjects		Amount Taken	No. Min. After Bake, T. = 100 F. Before Sweat, Sample 1	Highest Body Temperature	Urine p_H		Saliva p_H		Sweat Taken at 5 Minute Intervals During Bake	Change in Sweat p_H
					Before Bake	After Bake	Before Bake	After Bake		
21	♂	No bicarbonate	10	99.2	6.1	6.6	6.2	6.4	4.6-4.6-4.7	0.7
		15 gm. taken 35 minutes before bake	10	99.2	5.2	8.4	6.2	6.7	4.6-4.6	0.0
13	♀	No bicarbonate	15	99.7	6.6	6.4	7.1	7.0	6.1-6.8	0.7
		15 gm. taken in 5 gm. doses during hour before bake	25	99.5	6.6	8.4	8.2	6.6	5.0-5.2	0.2
14	♀	No bicarbonate	20	99.7	7.1	7.3	7.3	7.1	5.8-6.4	0.6
		10 gm. taken after first sweat sample	15	99.4	5.0	7.0	7.0	6.8	6.6-7.4	0.8
28	♀	No bicarbonate	40	98.6	5.0	5.2	6.0	6.4	4.6-4.6	0.0
		20 gm. taken in 10 gm. doses an hour and a half before bake	40	99.2	6.9	8.4	6.4	6.2	4.6-4.9	0.3
33	♂	No bicarbonate	15	100.7	5.7	6.4	6.8	6.3	5.8-6.8-7.3	1.5
		20 gm. taken in 10 gm. doses 15 and 30 minutes before bake	15	100.5	6.0	7.8	6.8	6.4	6.4-7.6-7.8	1.4

* The first urine and saliva specimens were collected before the sodium bicarbonate was taken.

While Henderson and Palmer [10] have observed an increased alkali tolerance in acute rheumatic fever, there has been nothing in the previous studies on arthritis by us or our associates to indicate that chronic arthritis is accompanied by systemic acidosis; but in order further to investigate this point the amount of sodium bicarbonate necessary to render the urine alkaline was determined in eight fasting arthritic patients in varying types and degrees of involvement. A urine specimen was taken before and an hour after the ingestion of 4 gm. of sodium bicarbonate in 150 c.c. of water, from 4.5 to 5 gm. being the amount given by Sellards [11] and others as the maximum required to produce alkalinity in normal persons. All eight cases fell within this limit. These results are in accordance with the normal values for the blood carbon dioxid content obtained in the previous series of seventy-two arthritic patients.[12]

RELATION OF SUGAR TOLERANCE TO BLOOD FLOW

In the studies on bakes, previously referred to,[1] attention was directed to the fact that during the conduction of a bake there is, under the conditions described, a rise in the percentage saturation of the venous blood with oxygen. The mechanism of this is not entirely clear, but it seems probable that it is related, in some part at least, to a heightened blood flow. Thus, it has been shown [13] that blood coming from a hyperemic part contains more oxygen and less carbon dioxid than does blood from normal regions. In view of the fact that a rise in the percentage saturation may accompany the demonstration of a lowered sugar tolerance,[1] it was thought that it might be possible to induce a lowered sugar tolerance by accelerating the blood flow if the cause of a lowered sugar tolerance was to be found in a heightened circulation. It has been previously noted, however, in studies on bakes conducted by us in collaboration with Dr. B. M. Hendrix, that, in the course of six bakes, in five the blood sugar fell very little but constantly; in five, the percentage oxygen saturation rose.

Three patients with arthritis were given 100 gm. of glucose during the course of a bake, their sugar tolerance having been previously determined to be normal. In one, the blood sugar rose higher with the bake than without, although remaining within normal limits. In two, the blood sugar did not rise so high with the bake as without, though within normal limits. In two, the percentage saturation rose higher in the bake; in the third, the percentage saturation was not determined.

Two patients were then given 100 gm. of glucose, and in each case one arm was placed in cold water, (17 C.) the other in hot water (40 C.) and the sugar tolerance was determined in each arm. The percentage oxygen saturation rose in the arms subjected to hot water, and fell in those placed in cold water. The sugar rose to practically the same degree in the two arms, varying only with the individual and not with the temperature.

One of these patients (Subject 19) had a low sugar tolerance and a high percentage saturation to start with; the other, had a high percentage saturation and a normal sugar tolerance.

Meakins and Davies [14] have shown that the effect of external heat on a part is to increase the percentage oxygen saturation of the venous blood, and we have shown that this is apparently true during the course of a systemic bake. While there is therefore no doubt that the percentage saturation rises with an increase

9. Starling: Human Physiology, 1920, p. 1218.
10. Palmer, W. W., and Henderson, L. J.: Clinical Studies on Acid Base Equilibrium and the Nature of Acidosis, Arch. Int. Med. **12**: 153 (Aug.) 1913.
11. Sellards: Bull. Johns Hopkins Hosp. **23**: 289, 1912.
12. Pemberton, Ralph; Foster, G. L.; Robertson, J. W., and Tompkins, Edna H.: Studies on Arthritis in the Army, Based on Four Hundred Cases, Arch. Int. Med. **25**: 230, 241, 242 (March); 335, 351 (April) 1920.
13. Wells, H. G.: Chemical Pathology, Ed. 4, Philadelphia, W. B. Saunders Company, p. 313.
14. Meakins, J. C., and Davies, H. W.: J. Path. & Bacteriol. **23**: 451 (Dec.) 1920.

in local or body temperature from external heat, there is only a slight indication of a relative change in the blood sugar, and this is in the opposite direction. The influence of an increased combustion of sugar because of the increased metabolism from the bake was not of enough moment to interfere with the experiment, as the three normal cases gave normal responses. It would also appear that the phenomena of a lowered sugar tolerance and the high percentage saturation of oxygen which accompanies it are referable to different mechanisms.

Attention has been previously directed[15] to the undoubted beneficial effects, in some forms of arthritis, of the application of a low caloric diet. In connection with this form of treatment and the study of its modus operandi we repeated some observations made during a complete fast of four days.[12]

The case previously studied was one of nearly complete fibrous anklyosis in which the patient recovered a large degree of motion in the four days mentioned. The patient also presented a greatly lowered sugar tolerance, which became increasingly lowered coincidentally with the acidosis incidental to the fast. The observations of Zuntz, Hofmeister and subsequent workers have shown, on several grounds, that acidosis

TABLE 5.—PERCENTAGE SATURATION OF VENOUS BLOOD, SUGAR TOLERANCE, p_H OF URINE, CARBON DIOXID COMBINING POWER OF BLOOD, AND DISSOCIATION CURVE

	Blood Sugar Values During Sugar Tolerance Test, Gm.	Oxygen Percentage Saturation	p_H of 24 Hour Urine Specimens	Acetone in Urine	Carbon Dioxid Content of Blood per Cent.
Before fast.....	0.084	58.19	5.4	None	64.85
	0.134				
	0.09				
Fast of 87 hours	.....	.....	5.6	None	
			5.3	Present	
			5.3	Present	
After fast.....	0.044	53.82	5.8	Present	39.93
	0.093				
	0.15				

tends to prevent the utilization of sugar and the storage of glycogen.[16] It has also been suggested that a lowered sugar tolerance is referable to the same mechanism, and it was therefore determined to study a comparable case under similar circumstances. In the present case, however, there were very few active symptoms, and there was also a normal sugar tolerance. There was marked anklyosis, probably bony, as well as fibrous, and during the course of a similar four-day fast there was discernible a small, though distinct, increase in the range of motion of the hip and knee under observation.

As Table 5 shows, observations were conducted on the percentage saturation of the venous blood, the sugar tolerance, the p_H of the urine, the carbon dioxid content of the blood, and the carbon dioxid dissociation curve. The percentage saturation obtained after momentary use of a tourniquet was slightly lowered during the progress of the fast, coincidentally with the improvement noted; the sugar tolerance was slightly lowered, the p_H of the urine remained fairly constant around 5.4, and there was marked acetonuria; the alkali reserve was greatly lowered, and this was also reflected in the dissociation curve. The blood carbon dioxid content fell from 64.85 to 39.93. It would appear, therefore, that the acidosis produced by fasting caused a slight lowering of the sugar tolerance, though not at all commenserate with that observed in the case referred to, in which there was a greatly lowered sugar tolerance from the outset. The percentage oxygen saturation did not increase with the slightly lowered sugar tolerance in the manner referred to elsewhere in this text. The fall in the percentage saturation was slight, and may have been merely an expression of the lowering of the oxygen dissociation curve produced by the acidosis.[17] There is therefore no evidence from study of this case that systemic acidosis, per se, is the cause of a lowered sugar tolerance or of an increase in the percentage saturation of the blood which may accompany the demonstration of a lowered sugar tolerance. It is hoped to pursue the question further, however.

OXYGEN THERAPY

In connection with the conception of arthritis as a disease in which there is a difficulty in some phase of the local or general oxidative metabolism, oxygen was administered to two patients with arthritis, at regular intervals and over a fairly long period. One patient inhaled pure oxygen for fifteen-minute periods twice daily for almost three weeks by means of the Meltzer method.[18] This consists in the respiration of oxygen through a tube fitted with valves and connected with a rubber bag and a tank, the whole so arranged that the pure oxygen respired was under pressure from the distended bag. The second patient was given oxygen three or four times a day for an even longer period, but in neither was any benefit observed. The failure of benefit is in keeping with the observation that arthritic patients as a class, and under the conditions described, tend to have a slightly higher percentage saturation of the peripheral venous blood than do normal persons, and the addition of further oxygen would therefore not appear, *a priori*, to improve the situation. Different results, however, might follow subjection of patients to increased positive pressure of oxygen over longer periods of time in a closed chamber.

p_H OF STOOLS

During the studies on the p_H of the sweat and the urine, observations were also conducted on three or four stools from each of eight patients with arthritis, and two normal persons. McClendon[19] found that the average p_H of the contents of the small intestine in two persons, obtained by lowering a tube, were 4.9 and 5.4, and that the hydrogen ion concentration became less as the tube descended into the small intestine. Five of the eight patients now under consideration were on restricted and fixed diets; three were not. Three of the patients showed marked improvement under the restricted diet. The p_H varied from 6.4 to 7.4, each individual maintaining a constancy to within 0.4, as a rule. The normal persons studied gave the same results. One arthritic patient who showed marked improvement on a lowered diet was studied when on and off this fixed diet, and gave no marked variation in the p_H of the stools. There is therefore, in these observations, no indication that the benefit from the application of restricted diet, in which the carbohydrate fraction is most reduced, is referable to any change in the reaction of the bowel content, so far, at least, as the feces and the method reflect this.

15. Pemberton, Ralph: The Use of Diet in the Treatment of Arthritis, Am. J. M. Sc. **161**: 517 (April) 1921.
16. Lusk, Graham: Elements of the Science of Nutrition, Ed. 3, pp. 261, 421, 447.
17. Barcroft, Joseph: The Respiratory Function of the Blood, New York, G. P. Putnam's Sons, 1914.
18. Rudolph, R. D.: Am. J. M. Sc. **160**: 10 (July) 1920.
19. McClendon: Science **52**: 566, 1920.

Through the courtesy of Dr. John Eiman, pathologist to the Presbyterian Hospital, Philadelphia, observations were also conducted as to the presence of streptococci; but from none of the cases could any be isolated.

The present paper is in the nature of a preliminary communication, to be followed later by the report of further studies now being conducted.

CONCLUSIONS

1. A series of ten supposedly normal persons and twenty-three patients with arthritis in various stages of the disease was studied in respect to the hydrogen ion concentration of the urine, saliva and sweat during the course of "electric bakes" administered in the usual therapeutic manner.

2. The urine of the normal persons, obtained before and after the bake, showed a very slightly less acid reaction on the average than did that of the arthritic patients in the ratio of p_H 6.2 and 6.4 to p_H 6.0 and 6.3. The reaction of the saliva was also very slightly less acid in the case of the normal persons, in the ratio of p_H 7.2 to p_H 6.9. The average differences are so small as to be almost negligible.

3. The study of the sweat from the forehead obtained before, during and after the bake, however, showed consistent and more marked differences between the two groups in the average ratios of p_H 7.0, 7.6 and 7.9 for normal persons and p_H 6.6, 7.2 and 7.5 for the arthritic patients. The reaction of the sweat of some of the patients with arthritis reached figures much more acid than were encountered among the normal persons.

4. The average initial reaction of the forehead sweat of the normal persons studied corresponds to a p_H of 7.0, which is just on the acid side of the blood reaction, though there may be departures to either side. The reaction of the sweat at different sites may vary, and it is important that conclusions regarding it be based on a number of persons.

5. During the course of a therapeutic bake there is a consistent and marked tendency for the reaction of the sweat to change toward the less acid or more alkaline range, irrespective of whether it was acid, neutral or alkaline at the outset. This tendency was invariable among the normal persons, and marked among the patients with arthritis. In two arthritic patients the very acid reactions of the sweat underwent no modification as the result of the bake. Administration of from 10 to 20 gm. of sodium bicarbonate was without influence on the reaction of the sweat in five patients with arthritis whose sweat was on the acid side of the blood reaction.

6. The percentage oxygen saturation of the peripheral blood tends to rise with increased local or body temperature when this is caused by external heat. Under these circumstances the blood sugar falls slightly. Attempts to reproduce the blood findings of a lowered sugar tolerance by administering glucose during a bake were unsuccessful.

7. Following the administration of glucose, similar observations made after placing one arm in hot and the other in cold water resulted in practically the same sugar figures in each arm, although the percentage oxygen saturation rose in the arm placed in hot (40 C.) and fell in the arm placed in cold (17 C.) water.

These observations suggest that the rise in percentage oxygen saturation which may accompany the demonstration of a lowered sugar tolerance is referable to an independent mechanism. They do not strengthen the view that a lowered sugar tolerance is due to a heightened blood flow.

8. Studies of the p_H of the stools of two normal persons and of eight patients with arthritis in various stages of disease revealed no significant differences. The p_H varied from 6.4 to 7.4, each individual maintaining a constancy to within 0.4, as a rule. One patient studied before and after convalescence on a lowered caloric diet, and another patient studied after convalescence from the same therapy, gave no marked variation. It seems fair to conclude that the benefits from the application of a reduced dietary do not depend on changes in the p_H of the intestinal tract, so far as the feces and the method reflect this. The foregoing series of stools were examined for streptococci, but none were detected.

9. Alkali tolerance tests administered to eight fasting patients with arthritis gave normal results in every case.

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ORTHOSTATIC ALBUMINURIA

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During the investigation, study and teaching of nephritis and allied conditions, there have come under our observation and been available for hospitalization or accurate control in the office numerous cases of so-called orthostatic or variable albuminuria, which have been made the subject of a special study. In our experience, every case of orthostatic albuminuria, with very rare exceptions, will become and remain albumin free, regardless of posture, exertion, time of day or urinary concentration, as long as the urine remains neutral or slightly alkaline. In three cases, alkalization failed to prevent the appearance of albumin, and, at present, we believe that, while there was no evidence of renal disease demonstrated, these cases include some slight or early element of nephritis, or belong to the group later referred to as "leaky kidneys." However, we do not claim that every case of pure orthostatic albuminuria will necessarily respond to alkalization by becoming albumin free, though the failure to do so in a given case leads us to suspect that we are dealing with another condition. It is to be noted, however, that several cases which persistently showed albumin in urine neutral to litmus at the time of voiding became immediately albumin free when the urine was neutralized to phenolphthalein, to which it had previously remained acid.

Concerning this condition, there is still much controversy regarding the factors in its production, and the time and causes of its appearance, these differences of opinion being reflected in the variety of names applied, intermittent, cyclic, postural, variable, adolescent and orthostatic albuminuria being the most frequently used. For the sake of briefness, the condition under discussion will hereafter be referred to as orthostatic albuminuria, which will be understood to designate a condition in which the urine excreted while lying down is albumin free, with the subsequent presence of albumin at times after rising, the amount

or presence varying with numerous factors to be discussed later.

Following Richard Bright,[1] in 1827, the presence of albumin in the urine was regarded as unquestionable evidence of kidney disease, until 1870, when Ultzmann[2] reported eight cases of albuminuria with no clinical findings that could be considered pathologic, and suggested the possibility of albuminuria without an accompanying nephritis. Work on this question was eagerly taken up, especially in England, and for the next twenty years numerous cases were reported and various theories advanced regarding its etiology and significance.

Hooker[3] carries the literature up to 1910, giving a chronological, critical and comparative summary of the various advances and changing conceptions; and from that date until the present there have been no noteworthy contributions. A great deal of the controversy has resulted from two or three fundamental misconceptions of the problem, and from confusion of terminology. Thus, Jehle[4] claims that lordosis in the twelfth dorsal and the first and second lumbar vertebrae is the cause; others claim it is due solely to the upright position, regardless of the presence or absence of lordosis, citing examples of marked artificial (orthopedic) or pathologic curvatures without albumin, while numerous writers see indications of an albuminuria which appears in the standing position, but is cyclic in character, appearing regularly at certain times of the day, or bearing a definite relationship to meals. Each of these, according to its progenitors, is an entity, deserves a special name and is honored with a distinct etiology.

It now appears possible to explain, on a relatively simple basis, the appearance of nonnephritic albumin, and to show how each of the several factors cited as etiologic may be more or less primary in the condition. One cannot, however, ignore certain questions that will persist and that we make no attempt to answer finally.

FREQUENCY AND PREDISPOSING FACTORS

Certainly, age is not the paramount factor; for, while orthostatic albuminuria appears most frequently in the period of adolescence, it is frequently found in the earlier years, and persists through middle life, occasionally to old age. There is no disagreement, however, on the relative frequency in early life, though some observers state that it is most frequent at or before the eighth year, while others present statistics to prove the more common occurrence between the ages of 10 and 16, or between 12 and 20, with a great decrease in frequency after maturity.

In the absolute frequency, writers again differ: Leube[5] reported the condition in 16 per cent. of 119 healthy soldiers; Capitan,[6] in 44 per cent. of healthy soldiers and 40 per cent. of children; Langstein,[7] in 12 per cent. of all children over 5 years old; Chateaubourg and Gull, in the same proportions, and Saito,[8] twenty-six cases in 150 girls examined. Recently, a study of the schoolchildren of Lausanne gave figures as high as 39 per cent., while Senator[9] states that he finds albumin in the urine of all healthy men, and that orthostatic albuminuria is only an exaggerated form of the normal.

On the other hand, MacLean, in 60,000 recruits examined for the British draft, observed albuminuria unassociated with other defects in 5 per cent., which coincides with the results obtained by Lee[10] and Parmenter[11] on the students at Harvard. In examining 5,000 men, aged 16 to 24, eliminating inflammatory processes of the genito-urinary tract and accepting as positive only cases in which the albumin was definite, Lee found, in specimens passed at the time of examination, 5 per cent. albuminurias, with only 0.1 per cent. actual nephritics. In reexamining any 100 unselected students, albumin was constantly found in 5 per cent., but not always in the same individuals as in previous examinations. Three would show albumin both times; two who had albumin the first time would have none, while two others previously negative would prove positive. Furthermore, while the freshman class (average age, 18) constantly showed 5 per cent., the upper classes (averaging 20+) gave only 3.5 per cent.; but the outcome could not be predicted in any given individual. Parmenter found 4, 11, and 15 per cent., respectively, in candidates for track, hockey and football; but the "stars" were always negative. There is no doubt that the observers finding constantly high percentages are using very delicate methods, and with the ordinary technic the figures will run much lower. It is also clear that the condition is found frequently in early youth, decreasing progressively to maturity.

The relation to sex has not as yet been satisfactorily settled. It is generally considered more frequent in boys, though Heubner[12] and Langstein deny this. Moor,[13] writing in 1921, agrees with them. Schlaps[14] finds it four times as frequent in girls as in boys, while Jeanneret,[15] who should speak with authority, states that it is slightly more frequent in girls. It would appear from personal observations that, in the second and third decades, the condition appears relatively more frequently in the male, while our experience is too limited to draw any conclusions regarding the earlier years.

However, there is universal agreement as to the type of individual in which orthostatic albuminuria is most frequent. So characteristic is the habitus that the condition can often be correctly predicted from mere inspection. Young children are thin, rapidly growing, of the weedy, frail or lanky type; the chest is long and narrow, the intercostal angle narrow, the scapulas and abdomen prominent, and the heart, which on percussion is apparently hypertrophied, is actually long and dropped, as shown by the fluoroscope.[16]

There is widespread evidence of vasomotor instability: pale skin, red lips, moist, cold, cyanotic hands, dilated pupils, subjective lassitude, headaches, dyspnea, faintness, palpitation, vertigo, sensitiveness to cold, and sound sleep, but with attendant tiredness in the morning; and, altogether, evidence that the subject is a high-strung, irritable child. In England, there is a well recognized type of boy, called "chapel fainter," among whom the proportion of albuminurias is high. Jeanneret, standing alone in this position, believes that the foregoing characteristics are due to the loss of albumin,

1. Bright, Richard: Guy's Hosp. Rep., 1827.
2. Ultzmann: Wien. med. Presse **11**: 81, 1870.
3. Hooker, D. R.: Postural or Orthostatic Albuminuria, Arch. Int. Med. **5**: 491 (May) 1910.
4. Jehle: Die lordotische Albuminurie, Leipzig, 1909; Ergebn. d. inn. Med. u. Kinderh. **12**: 808, 1913.
5. Leube: Virchows Arch. f. path. Anat. **72**: 145, 1878.
6. Capitan: Thesis, Paris, 1883.
7. Langstein: Die Albuminurie älterer Kinder, 1908.
8. Saito, Hideo: Clinical Investigations on Orthostatic Albuminuria, Am. J. Dis. Child. **22**: 388 (Oct.) 1921.
9. Senator: Deutsch. med. Wchnschr. **30**: 1833, 1904.
10. Lee, R. I.: M. Clin. N. America **3**: 1059 (Jan.) 1920.
11. Parmenter, D. C.: Boston M. & S. J. **183**: 677 (Dec. 9) 1920.
12. Heubner, O.: Lehrbuch der Kinderheilkunde, Leipzig, 1911.
13. Moor, F.: Brit. M. J. **1**: 671, 1921.
14. Schlaps: Arch. f. Kinderh. **35**: 41, 1903.
15. Jeanneret, L.: Arch. de méd. d. enf. **18**: 461, 1915.
16. Bass, M. H.: M. Clin. N. America **4**: 1595 (March) 1921.

causing a state of fatigue, depression and apathy, regardless of the fact that many such children show no albumin.

In adults, Teissier [17] notes a tendency to urticaria, chilblains, purpura, eczema and various erythemas. Lee, who found 5 per cent. in the entire freshman class, found 2 per cent. in candidates for the freshman squad, 1 per cent. in candidates for the varsity squad and no cases in the athletic "stars."

The most recent controversy is over the functional state of the nervous system. Eppinger and Hess,[18] in 1909, stated that all cases of orthostatic albuminuria in their experience showed sympathicotonia. More recently, Schleyer and Saito state definitely that all cases exhibit vagotonia. In our experience the manifestations of sympathicotonia and vagotonia are associated in these cases.

A few hereditary and familial cases have been reported, but no particular significance has been attached to them.

PROGNOSIS AND SIGNIFICANCE

The significance and prognosis of orthostatic albuminuria present, with a few outstanding exceptions, no great ground for debate. Quite alone, but certainly to be heard with consideration, is Senator, who states that an irritation or inflammation which may progress to recovery or to diffuse chronic nephritis is responsible for most, if not all, cases of cyclic or orthostatic albuminuria, and considers the eventual outcome as relatively grave. Opposed to him is Jehle, who believes that this form of albuminuria is not associated with renal pathology, and Heubner,[19] who also believes it does not signify the existence of any permanent underlying renal disease, with Politzer [20] maintaining a middle ground. Lee followed his cases five years, and in no known cases that did not present other evidence of nephritis did it develop; and the few cases with casts, found inconstantly, which were classified as orthostatic, were not more persistent than the others. With Parmenter, he concludes that the condition tends to disappear. Mason and Erickson [21] believe the prognosis is good, but suspect that the continued passage of large quantities of albumin may in itself finally give rise to irritative changes of the kidney. Mackenzie Wallis, describing cases of longstanding proteinuria, states that these kidneys show no evidence of progressive or organic disease. Gardner likens the presence of albumin to a cardiac murmur which persists without other evidence of disease, or to a tuberculous induration of a lung. Insurance companies are intensely interested in this question, and their statistics bear out the common beliefs in this regard. Fox,[22] who has devoted much time to insurance work, quotes Dukes, who followed 300 cases from Rugby, and Sir J. Goodhart, with thirty-eight cases after five years, and confirms their favorable opinion with a report of twenty cases followed over an average of thirty years. Of these twenty patients, five were dead: two from accidents, two from tuberculosis and one from chronic arthritis. Of the remaining fifteen, all were well, with an average age of 56, and after careful examination were pronounced clinically normal, none showing evidence of nephritis.

Barringer [23] examined 396 men, passed for life insurance, dividing them into three groups: 115 with albumin and no casts, 203 with albumin and a few hyaline casts and fifty-three with albumin and a few granular casts. Eleven years later, seventy of the original 396 were reexamined, twenty of whom had shown albumin alone. Of these twenty, twelve had normal urine; eight had albumin, and four of these eight had casts, with no evidence of cardiac or vascular disease. In the original group of 115 simple albuminurias, four patients had died, an increase of 37 per cent. over the expected deaths, and of the four deaths, two were from tuberculosis. From these and other insurance statistics, Barringer concludes that simple albuminurias are five times more frequent before 20 years of age than after; that only exceptionally is albumin evidence of incipient nephritis, but that it is evidence of lowered general resistance, predisposing to tuberculosis and an increased mortality.

Theoretically, then, orthostatic albuminuria might be regarded as a precursor of more severe renal disease; but, on the evidence of numerous observers, this does not seem to be the case. Personal observations support the opinion of those who have found that orthostatic albuminuria is not an indication of approaching renal disease.

The use of various renal function tests confirms the impression that the condition is benign. Numerous workers, with a variety of functional tests, all report normal findings. Mason and Erickson, with the Mosenthal test meal, find a marked oliguria and high concentration in the upright position, contrasted to normal results in bed, and a phenolsulphonephthalein test entirely inconclusive, some excreting more dye in the horizontal, others in the orthostatic, position, but excretion good in all cases. The kidneys appear hypersensitive in the upright position, as evidenced by an increased rate of urea excretion, with a slightly heightened chlorid threshold. This may be an indication of the increased production of urea in the upright position and should be checked by a determination of the urea in the blood. In fact, their own figures indicate that there is a heightened chlorid threshold, which may be accepted as evidence of such a change in the general chemistry of the body as might be associated with the increased urea production.

Artificial lordosis in the horizontal produces no definite deviation. Barker and Smith [24] report six cases: two in patients described as "spare," the others having no record of weight or nourishment, but all presenting accentuation of lumbar lordosis. In two, the phenolsulphonephthalein excretion was tested in the lying and standing positions, one patient excreting 64 per cent. in both positions, the other 69 per cent. lying and 54 per cent. standing. There was no accompanying record of albumin. The four other cases gave normal figures for the lying position. At present, there is no means of determining whether this variation in phenolsulphonephthalein excretion in the lying and standing positions is due to changes in the kidneys or changes in general body tissues, or both. Loeb,[25] using Koryani's quotient $\Delta/NaCl$, shows that, in orthostatic albuminuria and cardiac diseases, there is an increased $\Delta/NaCl$, with a lessened sodium chlorid and water output in the upright position as compared to the lying,

17. Teissier: Semaine méd. **19**: 425, 1899.
18. Eppinger and Hess: Ztschr. f. klin. Med. **67**: 68, 1909.
19. Heubner: Berl. klin. Wchnschr. **44**, 1907.
20. Politzer: Ren juvenum—Beitrage zur Kentniss der orthostatischen Albuminurie, Berlin, 1913.
21. Mason, E. H., and Erickson, R. J.: Am. J. M. Sc. **156**: 830 (Dec.) 1918.
22. Fox, R. H.: Lancet **1**: 116 (Jan. 15) 1921.
23. Barringer, T. B., Jr.: The Prognosis of Albuminuria With or Without Casts, Arch. Int. Med. **9**: 657 (June) 1912.
24. Barker, L. F., and Smith, F. J.: Am. J. M. Sc. **151**: 44 (Jan.) 1916.
25. Loeb: Deutsch. Arch. f. klin. Med. **83**: 452, 1905.

a condition not found in nephritis. English workers, using the diastase method, report normal findings, and there is practical agreement on this subject. Teissier describes an albuminuric cycle on arising, the urine showing increased amounts of coloring matter, then albumin, then increased amounts of urine, followed, by increased amounts of urea. This deserves further investigation, and may explain the divergent reports of urea, chlorid, phosphate and water secretions, leading as well to further knowledge of the mechanism.

We have had under observation during the last four years several cases of true orthostatic albuminuria in which appropriate laboratory and chemical tests have been carried out, including the phenolsulphonephthalein, nonprotein nitrogen, urea, creatinin, chlorids and sugar of the blood, the nitrogen index (modification of Ambard's coefficient), and modifications of Mosenthal's procedure, with particular reference to the variation of specific gravity, as well as alkali reserve (Van Slyke) and bacterial cultures and examination of the urine. Any detailed report of the results would be superfluous, as without exception they were within the limits of normal variation.

CHARACTER OF ALBUMIN FOUND

In the recent British literature, "proteinuria" is rapidly displacing "albuminuria," in references to the type of cases under discussion, owing to the adoption of the word by Mackenzie Wallis [26] in his clinical work and biologic chemistry, and to his belief that the substance in the urine of these cases is largely globulin. In a paper read in May, 1920, before the Royal Society, Wallis thus explains his position: "Physiological albuminuria, occurring after severe exertion, is largely serum albumin, which may leak through the kidney with excessive amounts of normal urinary constituents, especially urea, acting as a diuretic." In addition, he makes three more classes of nonnephritic proteinuria, the functional (adolescent, or postural), the familial intermittent, in which, for periods unrelated to any known factors, protein will be continually in the urine and the condition known as leaky kidney, defined as permanent, long-standing, profuse proteinuria showing no evidence of organic or progressive disease.

The blood serum contains two proteins: serum albumin and serum globulin, the former much in excess in organic renal disease, but not the sole constituent of the urinary protein, the latter usually overlooked. According to Wallis, the various classes of proteinuria contain certain proportions of serum albumin and serum globulin, respectively: functional albuminuria, 2:1, leaky kidney, 1:2, chronic nephritis, 6:1, and toxic nephritis, 6:1.

This is true globulin, often called euglobulin, an insoluble lipoglobulin formed by the combination of the water soluble pseudoglobulin with a lipoid and called commonly nucleo-albumin. Thus, in organic renal disease, the less viscous, more diffusible serum albumin predominates, while in the so-called functional and variable proteinurias, the globulin is in relative excess. The albumin of nephritis is thus similar to an inflammatory exudate in which serum albumin is abundant, while the globulinuria of the nonnephritic is of the nature of a transudate, which abounds in euglobulin. Furthermore, the proteinuria of eclampsia abounds in globulin, which decreases rapidly after delivery or with subsiding symptoms, while in nephritis an increased globulin of urine and blood is distinctly unfavorable, but here the globulin is the pseudoglobulin. Wallis concludes that the protein precipitated by acetic acid in the cold is euglobulin, which occurs in nonnephritic cases and tends usually to disappear in later life; that the condition "leaky kidney" is an excessive globulinuria and tends to remain, but shows no renal disease or structural changes, and that, in the true orthostatic type, both albumin and globulin are present, but during the course of the day or during improvement the globulin may fade and leave small amounts of albumin alone.

As early as 1886, Jaccoud [27] and Maguire [28] reported globulin in these cases, confirmed in 1905 by Teissier, but its presence has been largely ignored. In 1921, Saito found that this body precipitated by acetic acid varies absolutely and relatively in the same person, and Harrison [29] found no constant proportion of lipoglobulin, the variation being from 0 to 100 per cent. in the same person at different times. We have noted the frequent occurrence of the so-called nucleoalbumin, and sometimes have been struck by the large proportion of it, but have made no systematic quantitative comparisons with the amount of serum albumin.

ETIOLOGY

Regarding the etiology and mechanism of orthostatic albuminuria, there is less unity of opinion, and discussion centers about seven or eight theories, apparently more or less incompatible. The principal causes held partially or wholly responsible for the condition by various writers are: (1) lumbar lordosis, causing venous stasis of the renal vessels; (2) a subnormal type of constitutional and vascular development; (3) lesions of the renal substance; (4) vasomotor instability with renal hyperemia; (5) deficiency of some normal constituents of the blood; (6) reflection of a general lowered condition, and (7) foci of infection, with diminished respiratory function of the blood.

1. Jehle believes that in addition to orthostatism, or the upright position, lordosis of the twelfth dorsal and first and second lumbar vertebrae is the sole cause of this type of albuminuria, and he names it lordotic. The albuminuria he attributes to venous stasis of the renal vessels. Supplementary evidence confirms the important rôle of lordosis, but proves as well that it is by no means the sole factor, since, in many cases of severe albuminuria, inspection and roentgen-ray examination fail to reveal any lordosis; while the lordosis may exist in marked degree without albuminuria, both in otherwise normal cases and in spondylitis and cast fixations causing an artificial lordosis, and extreme provocative lordosis usually fails to cause the appearance of albumin. Lee finds albumin in three times as many students rated "D" in posture as in those who stand well. Bass states that there is usually present a postural defect causing lumbar lordosis and consequent renal congestion; he believes that the type is prone to lordosis, with albuminuria an expression of the curvature, and he succeeds in eliminating the albumin in many cases by applying a suitable brace. Saito found lordosis in 55 per cent. of forty-four patients of this type, whereas the average for a large number was 32 per cent. Also, among 150 girls were found twenty-six with orthostatic albuminuria, of whom fifteen had lordosis and eleven none, and nine extreme lordotics had no albumin.

26. Wallis, R. L. M.: Proc. Roy. Soc. Med. (Sect. Med.) **13**: 96 (May) 1920.

27. Jaccoud: Clin. med de la Pitre, 1887.
28. Maguire: Lancet **1**: 1106, 1886.
29. Harrison, G. A.: Lancet **2**: 991 (Nov. 12) 1921.

2. Politzer and Teissier believe that the condition is due to a subnormal constitutional or vascular development that precludes the upright position being maintained with normal physiologic functions, Politzer adding a second factor of a small renal lesion, and Teissier and Leube classifying kidneys as unpermeable, semipermeable and permeable and locating the permeability in the glomeruli, a result of this developmental defect.

Schlaps declares the condition is four times as frequent in girls as in boys, ascribing this to the frequency of developmental anomalies in girls. Teissier later ascribes the condition to abnormal metabolic processes and consequent nutritional disturbances of the kidney, causing increased permeability, and adds rheumatism and gout to the list; while later he and von Noorden [30] state that it is always a pretuberculous condition. In regard to permeability, the question arises, why does not the colloid of the blood always pass through the walls of the blood vessels of the kidney into the urine? Since urea, uric acid and bile salts pass, why not glucose and albumin, for egg albumin injected intravenously will pass into the urine? The only answer at present is that there is some selective activity associated with living cells, and the kidney normally excretes those substances which the blood brings and which are of no further use to it.

3. Heubner, Posner [31] and Pribram [32] believe the albumin is due to slight lesions of the renal substance, with no evidence of disease other than the presence of albumin in the upright position, but the mere assertion that the albuminuria is due to the upright position is not an explanation of the phenomenon.

4. The theory that orthostatic albuminuria is due to a vasomotor instability or a so-called neurosis developed from clinical observations before the facilities for determining blood pressure, and was carefully investigated without the present instruments. First among these workers were Erlanger and Hooker,[33] whose results follow in some detail. They found that in these cases the pulse pressure in the upright position was lower than in the horizontal, owing to a diastolic rise, the systolic remaining practically constant, as contrasted with a systolic rise in normal individuals, in whom the pulse pressure remains practically constant, and that in orthostatic albuminuria the pulse pressure and albumin vary inversely. Furthermore, when one takes the upright position in water at body temperature or in a pneumatic suit under pressure to overcome "gravity bleeding," the pulse pressure shows no decrease, with consequently no albuminuria. They show that pulse pressure is decreased by immersion in cold water and increased by immersion in warm water and by moderate and severe exercise and eating, and note a gradual increase during the day, with the albumin varying accordingly.

The amplitude of pulse pressure determines the degree of pulsation of current, and they show that a pulsating pressure is much more efficient than a steady pressure of the maximum pulsation. In a perfused, excised kidney, a satisfactory circulation is obtained with a much lower pulsating pressure than with a steady one, and, in an artificially perfused organ, edema which develops with a steady pressure can be prevented or reduced by an intermittent pressure. In addition to the improved renal circulation, the expansile movements of the glomeruli must be of value in the process of excretion. Mason and Erickson entirely confirm these findings, and in addition assert that they observed a decrease in pulse pressure while in the horizontal position by artificial lordosis, while Bass and Wessler [34] fail to find any indication of these blood pressure changes, working, however, with much younger children. Gesell [35] showed that, with the same rate of flow but with lowered pulse pressure, the nutrition of the kidney cells was markedly altered; and several workers have shown that during and immediately after exercise the diastolic and systolic pressures are much increased, the systolic more than the diastolic, this condition giving way to a fall of both with a decreased pulse pressure, at which time albumin appears, regardless of the actual systolic and diastolic pressures; and as the pulse pressure again reaches normal the albumin disappears.

Edel [36] found that diuretics, hot baths and dieting cause the albumin to disappear, and he emphasizes the vasomotor instability, resulting in an inability of the cardiovascular system to respond to ordinary changes.

Lee found wide variations in blood pressure, and, with critical observations, concluded that the alteration was inconstant and associated with the nervous disturbance attendant on the examination, that is, it represents types of labile blood pressure; but he found the incidence of albumin twice the normal in these cases. Sterling [37] notes the adolescent nervous development, which is notoriously unstable and may produce reflex hyperemia of the kidneys, particularly with a vascular system not yet fully developed. Dukes believes it is a renal hyperemia just held in check. Here, then, we begin to find a scientific basis, with well correlated attempts to arrive at a rational explanation of the situation.

5. Recently, the English [38] workers have attempted to show that the albuminuria is based on an abnormality of the blood related to lack of calcium, since many cases were reported cured by administration of calcium lactate: a condition of hypocoagulability and disordered calcium metabolism related to rapid growth of the bony system and characterized by certain skin conditions, such as chilblains, urticaria, eczema and purpura.

6. Parmenter, Pavy and others relate the condition to fatigue, digestive disorders, migraine and generally lowered conditions of vitality and resistance, and from Denmark come reports of a unilateral type, the albumin always appearing in the left kidney.

7. One other point we wish to bring out was first made by Jeanneret, who shows the marked influence of immobility of the body in causing albumin.

With such a variety of factors at work there is only one conclusion to be reached: this variable appearance of albumin is not an entity, but the result of two or more causes, none of which alone is able to produce the condition, but it may appear as the combined effect of several other factors. The condition may be regarded as a stasis of renal circulation as well as a stasis of other portions of the body, producing analogous results in body tissues and in the blood stream itself. Although there are at present no methods of demonstrating them, it is not unlikely that during the

30. Von Noorden: Ztschr. f. Urol. **1**: 1017, 1907.
31. Posner: Ztschr. f. klin. Med. **3**: 42, 1904.
32. Pribram: Deutsch. Arch. f. klin. Med. **90**: 367, 1907.
33. Erlanger and Hooker: Johns Hopkins Hosp. Rep. **12**: 145, 1904.
34. Bass, M. H., and Wessler, H.: A Study of the Blood Pressure in Children Showing Orthostatic Albuminuria, Arch. Int. Med. **13**: 39 (Jan.) 1914.
35. Gesell, R. A.: Am. J. Physiol. **32**: 70, 1913.
36. Edel: München. med. Wchnschr. **48**: 1833, 1901.
37. Sterling: Lancet **2**: 1157, 1887.
38. Luff: Brit. Med. J. **1**: 261, 1909.

period of albuminuria there are taking place in the pancreas, spleen, liver and splanchnic areas changes which correspond to those identified in the kidney function. Pressure above the umbilicus, deep enough to compress the vena cava, results within three minutes in an albuminuria similar in every respect to the orthostatic variety and probably results in some perverted function of numerous other tissues whose circulation is similarly disturbed. From this point of view, then, it is easier to understand the contradictions with which the literature is replete, for in no two individuals will the same factors be equally important. Fat or lean, short or tall, there may or may not be an adequate number of sufficiently potent factors operating synchronously to produce an albuminuria. Lordosis or the upright position may be important in one, while there are well developed cases of albuminuria which are definitely cyclic regardless of position.

Tentatively accepting the stasis hypothesis, it is necessary to examine the numerous elements in its production and roughly evaluate them. The upright position clearly is of primary importance, and reference again to Jeanneret aids in its explanation. A girl, aged 11, normal physically, had albumin at noon after school, but none after three hours in bed and none after playing for an hour in the garden. But albumin appeared after three minutes' standing immobile with artificial lordosis, and failed to appear under the same conditions if the legs were kept in motion.

Experiments in 204 unselected cases were carried out over a period of several months, with these results: Exaggerated lordosis, prone with immobility, gave albumin in 3 per cent. of cases; exaggerated lordosis, prone with movement of legs, in none; upright position alone in 1.3 per cent.; upright position, lordosis and movement of legs in 1.6 per cent.; upright position, lordosis and immobility in 49 per cent. He concludes that lordosis may create some obstacle by pressure on the vena cava or renal veins, but the effect is slight and more than compensated by lying prone, even in a position of maximum artificial lordosis, and lordosis in addition to the gravity slowing of the venous current rarely causes albuminuria without immobility. Bass and Wessler suggest that only those children react to lordosis by the excretion of albumin in whom the vasomotor system is unable to prevent renal congestion.

The muscular factor aiding the venous circulation is evidently as important as the upright position alone. Without it, the lumbar muscles empty into a renal territory embarrassed by a venous current already slowed by immobility of the leg muscles, with a marked stasis resulting. When this is overcome through mechanical means, as by support of the body in water or in a pneumatic suit, the effect of immobility is overcome.

One of the protections against renal venous stasis is the elasticity of the capsule. An insufficient capsule, a dysharmony of development between the capsule and parenchyma, is supposed to exist in all infants and youths and to a pronounced degree in some children. Consequently, a child showing this debility of renal capsule will be more likely to exhibit an orthostatic albuminuria. Concerning the so-called cyclic albuminurias, which appear and disappear regardless of posture, it may not be possible to separate and analyze the distinct factors in their production; but it is safe to say that on a fixed vasomotor basis there have been temporarily added factors important enough to produce, through their combined effects, an albuminuria. These factors are neutralized later by some compensating activity of the organism or are themselves withdrawn. Thus we can better understand Dubreuihl's classification as (1) transitory, accidental or acute, (2) chronic without periodicity and (3) periodic, intermittent or cyclic. Thus with the generally accepted disappearance or diminution of albumin following the noon meal, the most obvious factors are a decreased acidity of the urine and an improved venous circulation due to activity of the various viscera and increased mesenteric circulation. Also the decrease of albumin in the afternoon and evening is explained when we learn of a progressive increase of pulse pressure during the day.

In enumerating the factors in the production of this condition, we will accept the vasomotor instability, with decreased pulse pressure on standing, and the description of the type of individual and his reactions which generally accompany it, as present in a large proportion of cases, but not essential, as well as the possibility of small renal lesions; remembering that the albumin of a small organic kidney lesion may be postural in type, owing to drainage.

Altered metabolism, due to intoxication from frequent or chronic infections, must receive consideration. There is increasing emphasis being placed on the influence of infections and intoxications on the respiratory function of the blood and tissues, that is, the exchange of blood gases. It is when considered on this basis that these infections are such prominent clinical features in this group of albuminurias; and, in a majority of the cases coming under our observation, there have been distinctly infected tonsils, adenoids, infected processes about the teeth, or prolonged pulmonary or intestinal infection. Eradication of these infections has seemed to be an important step in the remedial program.

A physicochemical basis probably underlies the explanation of all these factors in the production of variable albuminurias, whether they affect the kidney tissue itself, the proteins of the blood or other tissues of the body. In cases in which the mechanical factors leading to an alteration of pulse pressure are prominent, is it not the asphyxiation of tissues through suboxidation, with resultant production of relative acidity, that alters the blood or other body tissues so that they become filtrable through the kidneys? Similarly, in cases of infection, is it not the intoxication which leads, through suboxidation, to the change in the character of the proteins that permits them to pass through the kidneys?

There must be a distinction between those cases in which the kidney tissue alone is involved by these various factors and those in which the blood and other tissues are involved. At the present stage, our facilities for investigation are not sufficiently developed to make this distinction clear, but the field promises to be fruitful for investigation.

TREATMENT AS RELATED TO ETIOLOGY

Experience has taught us that these cases are benefited by hygienic measures which bear direct or indirect relationships to the kidney or to circulation. Among these are the removal of sources of infection or intoxication, sufficient sleep, moderate exercise, fresh air and an adequate, balanced diet, though, within reason, the amount of protein taken is of no immediate importance. Closer analysis shows that, by these procedures, we are removing causes disturbing the normal condi-

tion of the kidneys, improving general circulation of the entire body and restoring the integrity of the blood in its ability to carry and distribute oxygen and nutrition, i. e., establishing normal physiologic efficiency.

That the appearance of albumin in the urine can be controlled by keeping the urine neutral or slightly alkaline we have determined to our own satisfaction. We ascribe this result not to the change in reaction of the urine but to the decreased relative acidity of the body tissues and fluids, of which the urinary reaction is only a consequence. So far, no references to this fact have appeared in the literature on orthostatic albuminuria, but Edel [36] came very close to the question in attempting to show that the development of albumin was prevented by saline diuretics. For this purpose, he used potassium acetate and determined the beginning and end of the diuretic action by the alkalinity of the urine. He does not, however, ascribe the absence of albumin to the alkalinity of the urine or to the decreased relative acidity of the body fluids, but to the increased quantity, decreased specific gravity and decreased coloring matter of the urine. The recent British literature contains many references to the inhibition of the appearance of albumin by calcium lactate, which in ordinary doses has no effect, but in repeated doses of from 30 to 60 grains (2 to 4 gm.) will temporarily prevent an albuminuria which otherwise would appear. As a result, the entire condition is being enthusiastically ascribed to a disordered calcium metabolism, with perversion of coagulation, etc. No references have been made to the reaction of the urine as a result of the medication.

In a number of our cases in which the appearance and disappearance of albumin in the urine closely followed the acid-alkaline reaction, calcium was fed in various forms. Only those calcium salts which neutralized or alkalized the urine were able to prevent the appearance of albumin. The same calcium salts, when given with or following doses of acid sodium phosphate sufficient to prevent this neutralization of the urine, failed to prevent the albuminuria, and other salts, such as calcium chlorid, which permitted the acid reaction to persist, failed entirely to prevent albuminuria. It is probable that the explanation of our observation concerning urinary reactions in relation to albuminuria can be found in the light of Martin Fischer's work. In vitro at least certain degrees of acidity dispose protoplasm to a state of colloid dispersion in which the integrity of the protein is decreased, with a tendency toward actual solution, and a decrease of its solidarity; in other words, an increased permeability. It is highly probable that in the kidney, owing to the combined result of venous stasis resulting from any of the accepted causes, in addition to the local increase of acid produced under such conditions, the integrity of the renal membrane is so far destroyed as to allow the passage of constituents of the blood which normally are held back, and that, by the addition of alkali sufficient to correct the acid condition, the permeability of the renal tissue or the physicochemical condition of the blood is so far restored as to prevent the further escape of albumin. It is also fair to suppose that, in our few cases which did not promptly respond to alkalization, there were factors present sufficient to produce a condition that was not corrected by such alkalization.

That urinary acidity beyond a certain degree is of little importance in the appearance of albumin is shown by Barach,[39] who examined the urines and blood pressures of numerous athletes before and after exertions, such as a marathon race, track meets and practice and baseball, and concluded that the height of urinary acidity does not determine the presence or amount of albumin, red blood cells or casts, but that these depend entirely on the degree of circulatory disturbance shown, as evidenced by the fall of pulse pressure.

SUMMARY

Observations covering approximately forty cases of orthostatic albuminuria indicate that the appearance of variable amounts of nucleo-albumin and serum-albumin in the urine in such cases is analogous to changes taking place in the blood and body tissues.

The condition, which appears most frequently in the young, in certain types of individuals, particularly the undernourished, rapidly growing ones, with unstable venous and vasomotor mechanisms and frequent or chronic infections, is accompanied by a pulse pressure smaller in the upright than in the lying position, is aggravated by immobility, and presages no progressive renal disease.

Repeated and accurate functional tests and blood chemistry observations reveal neither constant deviations from the normal nor constant variations between the upright and horizontal positions.

CONCLUSIONS

1. Neutralization or mild alkalization of the urine produces changes in the kidney, blood or body tissues which are followed by disappearance of nucleo-albumin and serum albumin from the urine, by restoring to normal the physicochemical state of the proteins and preventing their escape into the urine.

2. Neutralization may be brought about by administration of various alkaline salts, such as sodium or potassium acetate, or sodium citrate or calcium lactate, and similarly by the vegetables and fruits in the diet that contain alkalizing salts.

3. Other factors influencing this form of albumin in the urine are: circulatory efficiency in the kidney itself or in the body itself, and metabolic efficiency in the blood and body tissues as influenced by other factors than circulation, such as the conditions producing rapid growth in youth, and by infections and intoxications.

122 South Michigan Avenue.

39. Barach, J. H.: Am. J. M. Sc. **159**: 398 (March) 1920.

Conservatism.—Such is the conservativeness of our species that a new idea requires, often not decades but centuries to penetrate thoroughly the public mind. It is nearly sixty years since Darwin brought the theory of evolution into serious consideration and showed the folly of belief in special creation, yet it is not exaggeration to say that a very large majority of people at the present time do not believe in evolution. It is 250 years since the idea that living organisms do not spontaneously spring into existence from nonliving matter was first promulgated, and nearly sixty years since the last vestige of possibility was torn from the theory of spontaneous generation; yet even today the prevalence of such beliefs as that "horsehair snakes" develop out of horsehairs in water is nothing short of astonishing. It is 120 years since Jenner proved the efficacy of vaccination against smallpox, yet there exist at the present time numerous antivaccination societies whose sole purpose is to denounce vaccination as an unpractical and illogical proceeding. How can we expect popular belief in the mosquito transmission of malaria which was demonstrated only twenty years ago?—Chandler: Animal Parasites and Human Disease, 1922.

OBSERVATION ON THE RESULTS OF ROENTGEN THERAPY IN CHRONIC TONSILLITIS

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Great interest in roentgen therapy has been aroused in recent years by remarkable results in many and various pathologic processes. The enthusiastic claims by some advocates of this method of treating chronic inflammation of lymphoid tissue, particularly the tonsils, has stimulated this summary of the results observed in a series of cases, so treated, occurring in the practice of Dr. C. G. Coakley and myself. The cases have been carefully observed clinically, and pathologic and bacteriologic studies have been made, chiefly at Columbia University, by Drs. W. C. Johnson, Hans Zinsser and J. H. Mueller, for whose help I am indebted.

So far as can be judged from published articles, the effects to be expected from roentgen therapy in chronic tonsillitis is a reduction in size, due to diminution of the lymphoid tissue, and an increase, relative if not actual, of connective tissue, resulting in an opening of the mouths of the crypts and their sterilization by improved drainage. This should result in removal of any symptoms due to mechanical obstruction or absorption of toxins or bacteria. Other lymphoid tissue in the pharynx and nasopharynx is also supposed to disappear. A strong point is made of this, as it is difficult or impossible to remove all of this tissue surgically.

To quote Dr. Witherbee,[1] "The absorption of the lymph tissue in the tonsil, adenoid and lymph tissue of the nasopharynx not only drains the infected crypts, but also leaves only fibrous and connective tissue, which nature utilizes in her defense in all local infections." He gives a table showing the growth of from fifty to a hundred colonies of streptococci from the secretion expressed from the tonsils before one roentgen-ray treatment, and the growth of none from a culture made two weeks later. Also a reproduction is given of a section of a tonsil, showing very considerable replacement of lymphoid tissue by a rather homogeneous substance in a tonsil excised four months after one roentgen-ray treatment. He also states that the final results of roentgen-ray treatment of the tonsils can be determined in any given case only after eight exposures have been made at two week intervals, and two months have elapsed after the eighth treatment. This is a modification of earlier statements, when a minimum of four treatments at two-week intervals was advised, and favorable results were observed before the completion of the treatment.

Roentgen therapy would be the treatment of choice on account of the lack of pain, loss of time from business and the admitted possibility of some more or less dangerous complication of an operation, if the results obtained were satisfactory. Dr. Coakley has felt for some time that these results were not satisfactory, and my own observations and those of others agree with his. He has therefore desired that records of some of his cases be included in this article, to bring the subject to the attention of the medical profession. While it is true that patients who have been really cured by roentgen therapy might not again come under the observation of a laryngologist, it would be strange, when results were satisfactory, if not a single instance reached the attention of a man with the extensive experience of Dr. Coakley. Dr. F. L. Lederer [2] has observed a series of cases of tonsillar disease treated by roentgen ray and he noted no marked change in their condition. He points out that, when diseased tonsils are causing such conditions as rheumatism, endocarditis and nephritis, the long duration of the course of roentgen-ray treatments might jeopardize the life of the patient.

From our observations, we feel that roentgen therapy, as now advocated, may cause more or less diminution in the size of tonsils or other lymphoid tissue in the pharynx or nasopharynx, but the residue has been observed acutely inflamed, and much increased in size while inflamed. It has been demonstrated that it is the small fibrous tonsil that is as likely to serve as a focus of infection with remote symptoms. The observations on tonsils excised indicate that they are not made free of pathogenic bacteria; that there is no evident increase in connective tissue, diminution of lymphoid tissue, lack of activity of the germinal centers or widening of the crypts. Neither the adenoids nor the hypertrophic lymph nodules on the posterior wall of the pharynx disappear; nor do they change in any appreciable way; and they are subject to occasional inflammations similar to those preceding roentgen therapy. General symptoms, involving the heart and joints, have not been relieved in these cases by roentgen therapy, and, in some of the cases, have improved following an operation some time after roentgen therapy. Dr. Zinsser has called attention to the possibility of bacteria, present in the mouth, rather rapidly invading tonsil tissue between the time of tonsillectomy and delivery of the tonsils at the laboratory. This may be true; but Dr. Witherbee's suggestion as to boiling the tonsil for one minute would tend to discourage the growth of most bacteria, whatever their origin.

The case histories and findings are summarized, to support the conclusions offered. We feel that these should be published, as undue enthusiasm about any therapeutic measure is liable to cause injury to those it is designed to benefit, either directly or by supplanting more effective measures. Until it is more definitely shown that diseased tonsils and other lymphoid tissue in the pharynx and nasopharynx can be eradicated as efficiently by a less unpleasant process, reliance must be placed on surgery.

REPORT OF CASES

CASE 1.—*History and Operation.*—Mr. P. H. B., aged 29, had had several attacks of tonsillitis and one of quinsy. There were intermittent symptoms of toxic absorption, chiefly of the gastro-intestinal tract. Six roentgen-ray treatments of the tonsils, at two-week intervals, were given in the winter of 1921. The quinsy occurred six months later. The tonsils were removed by Dr. Coakley under general anesthesia, Oct. 11, 1921, with smooth convalescence. When the patient was seen four months later, the general symptoms were improved, and there were six or seven scattered lymph nodules on the posterior pharyngeal wall.

Pathologic Report.—The epithelium covering the tonsils, where present, was unusually thick. The germinal layer, of dark-staining cells, was thicker than usual, and sharply demarcated from the superficial cells. Lymphoid tissue was abundant. Germinal centers were large and contained many mitotic figures. Connective tissue septums and capsule were slightly infiltrated with lymphocytes. There was no increase

1. Witherbee, W. D.: New York State J. Med. **21**: 14 (Jan.) 1921; also a paper read before the American Electrotherapeutic Society, Sept., 1922.

2. Lederer, F. L.: The Roentgen Ray in Tonsillar Disease, J. A. M. A. **79**: 1130 (Sept. 30) 1922.

of connective tissue in or around the tonsils. The crypts contained cornified epithelium and lymphocytes.

Bacteriologic Report.—Cultures were taken from the center of the tonsils after careful incision with a sterile knife, and *Streptococcus viridans* was found in both of them. In one of them, *Staphylococcus albus* was also present.

CASE 2.—*History and Operation.*—Mr. W. A. B., aged 57, had had frequent colds, sore throat and sinusitis. He received twelve roentgen-ray treatments of the tonsils from March to September, 1922. No improvement was noted, and a thin secretion remained in the tonsil crypts. Tonsillectomy was performed, Oct. 5, 1922, by Dr. Coakley, under local anesthesia, with smooth convalescence.

Pathologic Report.—The crypts were rather large and contained epithelial cells mixed with lymphocytes and polymorphonuclear leukocytes. Surrounding the crypts was a moderate amount of lymphoid tissue with germinal centers. At the periphery of the lymphoid tissue, extending diffusely into the adjacent fibrous tissue, were numerous plasma cells, with a moderate number of lymphocytes and a few eosinophils. Broad bands of connective tissue passed through the tonsils, separating the regions of the crypts with their adjacent lymphoid tissue into what appeared as islands. This was probably only a relative increase of fibrous tissue, due to condensation from loss of lymphoid tissue. There had evidently been a marked decrease in lymphoid tissue, which it did not seem possible to ascribe to treatment, unless the tonsils were known to be distinctly hypertrophic before roentgen-ray exposure. If there had been any necrosis of lymphocytes from the roentgen ray it is possible that the dead cells and nuclear fragments would have been completely removed in the two months which had elapsed since the last treatment.

CASE 3.—*History and Operation.*—Mr. B. L. S., aged 56, suffered rheumatic pains, especially in the shoulders. He also had diabetes. The tonsils were large, with buried crypts. Roentgen-ray treatment of the tonsils was given July 15 and Aug. 10 and 25, 1920. October 25, the tonsils seemed slightly smaller, but the crypts still contained a secretion which showed *Streptococcus viridans* and staphylococci on culture. The pains in the shoulders persisted. Nov. 8, 1922, the patient was still having attacks of arthritis; the tonsils were moderately large, and there were buried injected pillars and crypts yielding a thin secretion. There was no glycosuria. Tonsillectomy was performed, Nov. 14, by Dr. Coakley, under general anesthesia. Convalescence was smooth and the pain in the shoulders improved.

Pathologic Report.—The tonsils were covered with normal epithelium. They were surrounded by thick capsules of dense, fibrous connective tissue. The crypts were not dilated, and most of them were comparatively free from evidence of infection. One crypt, however, contained a small amount of pus, and the wall was infiltrated with leukocytes. The lymphoid tissue was moderate in amount, and contained many distinct germinal centers. The change appeared to be, in part at least, what might be expected in a man 56 years of age; slight atrophy of lymphoid tissue and relative fibrosis. Inflammation may have been a factor, but the present evidence of infection was slight. Apparently, there was no change which could definitely be ascribed to roentgen-ray treatment.

CASE 4.—*History and Operation.*—Mr. R. G., aged 50, suffered from malaise, loss of weight and anemia, suggesting malignant endocarditis, but no positive evidence of this was obtained. The tonsils were suspected, as the crypts contained thin pus, and were treated eight times by roentgen-ray at two-week intervals during the fall of 1921. No change was noted except some sore throat, a week or ten days after each treatment. Cultures of the tonsils taken July, 1922, showed only staphylococci; but thin pus was still present in the crypts. Tonsillectomy was performed, July 17, by Dr. Coakley, under local anesthesia, with smooth convalescence. Two months later, the patient had gained 12 pounds (5.5 kg.) and was greatly improved in appearance and vigor.

Pathologic Report.—The tonsils were covered with stratified squamous epithelium which showed no abnormal change. The crypts were large and contained many polymorphonuclear leukocytes, clumps of bacteria and desquamated epithelial cells. The walls of the crypts were in places densely infiltrated with leukocytes. The crypts were surrounded by a moderate amount of lymphoid tissue, with numerous distinct germinal centers. At the periphery of the lymphoid tissue, extending for a variable distance into the connective tissue, were large numbers of plasma cells, with a few polymorphonuclear leukocytes and eosinophils. The tonsillar tissue was surrounded by a thick connective tissue capsule, and several septums of connective tissue separated the masses of lymphoid tissue which surrounded the crypts. There was no definite "scarring" of the tonsils.

CASE 5.—*History and Operation.*—S. B., a youth, aged 17, had had chronic cardiac valvular disease since childhood. He was undersized and underweight and had had chorea and frequent tonsillitis, but no attack in the last three or four years. The tonsils had been treated by roentgen ray five times, eighteen months before. No improvement was noted. The tonsils and a moderately large mass of adenoids were removed, May 3, 1922, by Dr. Babcock, under general anesthesia, with smooth convalescence. Six months later, the patient had made a marked gain in weight, strength and activity.

Cultures showed *Streptococcus viridans* in great numbers in both crypts and tissue, and a few hemolytic streptococci in the crypts.

Pathologic Report.—The tonsils showed abundant lymphoid tissue, with numerous germinal centers. The crypts were not enlarged, and contained only a few lymphocytes and red blood cells. There was no fibrosis.

CASE 6.—Mrs. E. W. C., aged 38, underwent incomplete tonsillectomy in Chicago in 1919, a portion of the lower pole being left in the right fossa. Three treatments by roentgen ray failed to produce any appreciable change in this tissue, which was periodically inflamed, in association with colds resembling vasomotor rhinitis. The remainder of the right tonsil was removed May 26, 1922, with apparent cure to date.

CASE 7.—Mr. C. Z., aged 23, had had malaise and irregular, slight fever four or five months when first seen by Dr. Coakley in February, 1920. Occasionally, he had sore throat. The tonsils were moderately large and buried, with cheesy secretion crypts. There was no cervical lymphadenitis. Two treatments by roentgen ray were given in April, 1920. In December, the patient felt somewhat improved; the tonsils seemed smaller, but still contained thick and thin secretion in crypts, showing *Streptococcus viridans* and *Staphylococcus aureus.* The cervical lymph nodes were now palpable. Symptoms recurred, and the tonsils were removed in the fall of 1921. The patient has been well since.

CASE 8.—W. P. E., a youth, aged 17, had had several attacks of acute rheumatic fever with endocarditis. The tonsils and adenoids were removed by Dr. Coakley in 1915. The patient suffered attacks of rheumatism with cardiac involvement in 1918 and 1921, and a fatal atttack occurred in 1922. He was in fairly good shape between attacks. He had considerable lymphoid tissue on the posterior pharyngeal wall, which became acutely inflamed at intervals. This was treated by five roentgen-ray treatments during the early spring of 1921 and one in the fall of 1921. The attack in 1922 came on subsequent to roentgen-ray treatment. This also showed no appreciable effect on the pharyngeal lymphoid tissue, which became acutely inflamed with his attacks of rheumatism.

CASE 9.—I. M. F., a boy, aged 11, had three operations on the left mastoid at the age of 2, and there had been occasional discharge since. There was frequent acute rhinitis. An early operation on the tonsils left a small portion of the right tonsil. There was great hypertrophy of the lymph nodules on the posterior pharyngeal wall. He received several treatments by roentgen ray between November, 1920, and March, 1921, without any change being noted except that which occurred before roentgen-ray treatment in that the tissue was more swollen when inflamed than when not inflamed. Colds and attacks of pharyngitis have persisted to the present. The ear, however, does seem improved, but it is hard to tell whether the roentgen ray benefited this or not.

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EGGS AS A SOURCE OF VITAMIN B*

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That hen's eggs contain vitamins is evident from experiments conducted long before the importance of these food factors in nutrition was recognized. Thus, in 1891, Socin[1] reported having successfully fed mice on a mixture of starch, cellulose and egg yolk for ninety-nine days, and he believed that they could have continued to thrive on this diet. Following the discovery of experimental polyneuritis in birds, egg products were repeatedly tested, with successful outcome, for their antineuritic potency.[2]

As the white of egg is said to contain no vitamin,[3] the yolk acquires the preeminent interest in respect to this factor. One finds the statement that the yolk is "especially rich" in both vitamin A and vitamin B.[4] Eggs are frequently classed with milk in such generalizations. Our experience with the latter food has shown that its content of vitamin B, while noteworthy, is by no means invariably as large as students have been led to assume.[5] Feeding tests with commercial desiccated eggs showed us that the amounts required to promote growth at a normal rate on a diet adequate except with respect to vitamin B were nearly twice as large as is the quantity needed of a dried green vegetable, such as spinach.[6] Not until the admixture of dried whole egg with a ration of casein, from 11 to 16 per cent., starch from 38 to 52 per cent., butter fat, 9 per cent., lard, 16 per cent., and inorganic salts, 3 per cent., exceeded 15 per cent. of the food was the rate of growth satisfactory. As the solids of the yolk constitute about 70 per cent. of the total egg solids, this means a content of more than 10.5 per cent. of dry egg yolk in the successful feeding tests.

The outcome of these earlier incidental tests was surprising, in view of the impression which we had gained from published statements regarding the richness of the water extract of boiled egg yolk in vitamin B. McCollum and Davis[7] have stated that the water-soluble substances, mostly inorganic salts, and amounting to 4.5 gm., extracted from 200 gm. of dry egg yolk sufficed to render 3.12 kg. of ration efficient for growth in the case of rats on a diet devoid of vitamin B. The extracted product thus represented only 0.14 per cent. of the food—an order of magnitude approaching that requisite in the case of the most potent yeast extract fractions prepared in our laboratory.[8] Calculated in terms of dry egg yolk, the figures of McCollum and Davis represented an equivalent $^{200}/_{3120}$ or 6.4 per cent. of their ration. They themselves state that 5 per cent. of desiccated egg is not sufficient to supply the water-soluble accessory.

As the percentage of a component in a ration gives no adequate quantitative index of its nutritive potency, unless the comparisons are made between equal ingested quantities of food mixtures of equivalent energy value and otherwise suitable, it will be preferable to state our experience in feeding egg yolk as a source of vitamin B to rats in terms of the absolute daily intake. Rats weighing 100 gm., living on a standard food mixture, of which they consumed about 50 gm. per week, have required not less than 0.8 gm. of dried egg yolk a day (equivalent to 10 per cent. of this food mixture) fed apart from the rest of the ration, to secure even an approximation to the normal rate of growth; and in every case the rate of gain was increased when 0.2 gm. of dried brewers' yeast replaced the egg yolk preparation. For the 100-gram rat, an intake of 0.8 gm. of dried egg yolk is equivalent to about 4 gm. of fresh whole egg. As an average sized egg weighs 43 gm., or ten 100-gram-rat doses of vitamin B, and we have found that such a rat requires about 15 c.c. of cow's milk for its daily allowance of vitamin B, a simple calculation indicates that one (average) hen's egg is equivalent to about 150 c.c. of cow's milk in vitamin B potency.

We have prepared a water extract of egg yolk as follows:

> The yolks were separated from hard boiled eggs and repeatedly extracted with distilled water. The extracts were then centrifugated, and the fluid was filtered through paper pulp. The filtrate was concentrated and dried in vacuo. In this way, 5.66 gm. of dry egg yolk extract was obtained, in one case, from the moist yolks (415 gm.) of twenty-four eggs, or 1.4 gm. for each hundred grams of moist egg yolk; another lot of eggs yielded 1.5 gm. of dry extract for each hundred grams of moist egg yolk.

A daily intake of 33 mg. of this dried extract product (equivalent to 2.25 gm. of moist or 1.12 gm. of dry egg yolk), fed apart from the ration free from vitamin B, permitted growth at less than normal rate; when 66 mg. of the same product was fed daily as the sole source of vitamin B, the increments in body weight were demonstrated over a period of a month or more to be satisfactory. This dosage is equivalent to about 4.5 gm. of moist egg yolk a day, a requirement somewhat higher than that indicated by our feeding trial with dried egg and egg yolk, and due doubtless to the incomplete extraction of all the vitamin B in the preparation of the residue from the water extract of the yolks, or to the adsorption of some of it on the surfaces with which it was brought into contact in filtration.

SUMMARY

By extraction of egg yolk with water, it is possible to secure a product comparatively rich in vitamin B, the daily dose required for a 100-gram rat being considerably less than that of the most potent dried yeast hitherto examined. The content of the egg yolk in vitamin B is not large, a daily intake of at least 1.5 gm. of the fresh yolk being required when it furnishes the sole source of vitamin B to a 100-gram rat. The

* From the Laboratory of the Connecticut Agricultural Experiment Station and the Sheffield Laboratory of Physiological Chemistry of Yale University. The expenses of this investigation were shared by the Connecticut Agricultural Experiment Station and the Carnegie Institution of Washington, D. C.

1. Socin, C. A.: Ztschr. f. physiol. Chem. **15**: 93, 1891. Similarly E. V. McCollum (Am. J. Physiol. **25**: 127, 1909) states that mice grew well on boiled egg yolk as the sole food.
2. Eijkman, C.: Arch. f. Schiffs- u. Tropen-Hyg. **15**: 698, 1911. Cooper, E. A.: J. Hyg. **12**: 436, 1912. Steenbock, H.: J. Biol. Chem. **29**: xxvii, 1917. Funk, Casimir: München. med. Wchnschr., 1913, p. 2614.
3. Plimmer, V. G., and Plimmer, R. H. A.: Vitamins and the Choice of Food, London, Longmans, Green & Co., 1922, p. 149.
4. McCollum, E. V.: Newer Knowledge of Nutrition, New York, the Macmillan Company, 1919, p. 81.
5. Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **34**: 537 (June) 1918, **41**: 515 (April) 1920; Biochem. J. **16**: 363, 1922.
6. Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **37**: 191 (Jan.) 1919.
7. McCollum, E. V., and Davis, M.: J. Biol. Chem. **23**: 181, 1915.
8. Osborne, T. B., and Wakeman, A. J.: J. Biol. Chem. **40**: 383 (Dec.) 1919.

whole egg is accordingly not exceptionally rich in vitamin B, when contrasted with other foods already investigated. Judged by the comparative trials on rats, the average sized hen's egg is equivalent in vitamin B potency to about 150 c.c. of cow's milk, or a quart of milk and six or seven whole eggs of the average sort have an approximately equivalent vitamin B value.

CAPILLARY PERMEABILITY IN ANAPHYLAXIS

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The acute anaphylactic shock in dogs is characterized by a sudden pronounced fall in arterial blood pressure. This fall usually begins about forty seconds after the beginning of the intravenous protein injection. The pressure usually reaches a minimum of about 25 mm. of mercury by the end of ninety seconds. In shocks of moderate severity, the pressure remains at this low level for about twenty minutes, and then gradually increases, reaching normal in from one to two hours, depending on the severity of the reaction. With highly sensitized dogs, injected with relatively large doses of the specific foreign protein, little or no recovery takes place, the pressure remaining at a low level till the death of the animal, which usually occurs in about forty minutes.

This characteristic fall in arterial blood pressure does not take place in dehepatized (Eck-fistula) dogs. This is true, not only for the mildly sensitized dogs previously reported,[1] but also for highly sensitized dogs giving the fatal type of anaphylactic shock. From this fact, we have concluded that the characteristic fall in arterial blood pressure is in some way dependent on liver function. The theory we have proposed to account for this relationship assumes that the characteristic fall in arterial pressure is due to an explosive hepatic auto-intoxication, the formation or liberation of hepatic products having a histamin-like reaction on the extra-hepatic blood vessels.

As a preliminary to the study of these hypothetic, anaphylactic, hepatic internal secretions, we have tested anaphylactic reactions in various isolated canine tissues. It is our hope to find a tissue that will serve as a reliable reacting index for the hypothetic hepatic products. The present report is based on reactions observed in isolated canine lungs. The lungs were tested by perfusion methods.

To make the perfusion test, the inferior vena cava is ligated close to the heart, and an afferent cannula is tied in the superior vena cava. The ascending aorta is then ligated within the pericardial sac, and an afferent cannula is placed in the left auricular appendage. The lungs are now inflated to their midrespiratory volume, and the trachea is clamped. The perfusion fluid is well aerated Ringer's or Locke's solution, with a temperature of 38 C. and a perfusion pressure of from 25 to 30 mm. of mercury.

1. Manwaring, W. H.: Intestinal and Hepatic Reactions in Anaphylaxis, J. A. M. A. 77: 849 (Sept. 10) 1921.

If the lungs of a normal dog are perfused for about three minutes with Locke's solution, followed by Locke's solution containing from 0.25 to 1 per cent. of horse serum, no recognizable pulmonary reaction takes place. The rate of perfusion flow remains constant on change from the Locke's solution to the dilute serum. When the tracheal clamp is released, the lungs collapse promptly and normally. No frothy fluid escapes from the trachea. If, however, the lungs of a sensitized dog are similarly perfused, very marked pulmonary reactions occur. For example, the rate of perfusion flow, which usually varies from 1,200 to 1,500 c.c. a minute in medium sized dogs, is rapidly reduced to about 300 c.c. a minute. With smaller serum doses, a slight tendency to recovery is occasionally noted after the third minute.

During this reaction, the lungs increase in size and take on a rubber-like consistency. When the tracheal clamp is released, practically no pulmonary collapse takes place. A large amount of clear, frothy fluid escapes from the trachea. If the perfusion is now continued, fluid continues to pour out of the trachea almost as rapidly as it escapes from the efferent cannula.

To us, the most striking feature of these reactions is the marked increase in capillary permeability thus demonstrated. We believe that increased specific capillary permeability will ultimately be shown to be the dominant fundamental physiologic change in protein sensitization, to which all other anaphylactic reactions are secondary. This view is in accord with clinical evidence.

SUMMARY

If the lungs of a dog previously sensitized to horse serum are perfused with Locke's solution, followed by Locke's solution containing from 0.25 to 1 per cent. of horse serum, these reactions are observed: (*a*) a 75 per cent. reduction in the rate of perfusion flow; (*b*) noncollapse of the lungs when the tracheal clamp is released, and (*c*) the escape of large amounts of fluid from the trachea when this clamp is released.

We believe that the increased capillary permeability thus demonstrated will ultimately be shown to be the dominant fundamental physiologic change in protein sensitization, to which all other anaphylactic reactions are secondary.

Medical Aid in Russia.—A communication from the secretary of Dr. Nansen, from Geneva, November, 1922, states that Dr. Haigh, a member of the epidemics commission of the League of Nations, who visited the provinces of Nikolaieff, Kherson, and Odessa, Russia, describes the serious situation of the medical and health institutions in a report addressed to Dr. Nansen. The hospitals lack everything necessary for good work, drugs, linens, soap and disinfectants are all needed; even clinical thermometers are very scarce. Dr. Haigh fears that the lack of preventive equipment will result in a grave extension of the epidemics of typhoid, typhus and relapsing fever during the winter. The medical staff, badly equipped, and even suffering from hunger, is making a desperate struggle with the situation.——It is stated that the American Relief Administration at one time supplied 1,663 hospitals in Russia, containing 120,858 beds, with supplies; 818 ambulatories, serving daily 75,329 patients, and 819 children's homes totaling 60,031 inmates. In addition, the organization distributed 97,110 boxes, barrels, bales and cases of medical equipment; supplied vaccines and serums for the inoculation of millions of the population, and distributed bed linens, rubber goods, bandages and laboratory equipment. At one time, 11,000,000 were being fed by the administration, and it is expected that it will continue to function during this winter, feeding about 3,000,000 people.

PRESENCE OF THE "ALKALINE TIDE"

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In two recent papers we [1] have reported certain conclusions based on the results of studies of the alkaline tide in urine. In neither of these papers is there a detailed presentation of the results on which the conclusions were based; and, since the presence of the alkaline tide has been questioned in a communication [2] recently published in THE JOURNAL, we wish to present a summary of our results and a brief discussion of the methods used. We shall not attempt to discuss the literature dealing with the subject, as that has been discussed in an earlier publication.[3]

The conclusions were based on twenty experiments carried out on nineteen subjects who did not show evidences of acidosis by clinical or laboratory tests, and who were not receiving alkali or acid therapy. The urine voided during a twenty-four hour period was collected in seven portions. From 7 a. m. to 7 p. m. a specimen was taken every two hours, and all voided from 7 p. m. to 7 a. m. the next morning was combined as a single specimen. Each sample was analyzed separately for the amounts of acid and ammonia which it contained; the reaction (hydrogen ion concentration) of each was determined with a fairly high degree of accuracy. As the excretion of ammonia in this series has been discussed already,[3] we shall confine ourselves here to a discussion of the reaction and acid content.

TABLE 1.—AVERAGE VALUES

Time	Reaction p_H	N/10 Acid Per Hr., C.c.	Volume Per Hr., C.c.
7- 9	5.56	11.83	59
9-11	5.79	9.59	68
11- 1	5.86	10.58	80
1- 3	5.45	14.89	54
3- 5	5.87	14.65	71
5- 7	5.69	13.21	58
7- 7	5.50	13.80	42

The amount of acid present was determined by the method of Folin.[4] In this method an aliquot of the urine is titrated with alkali to the first pink color with phenolphthalein after the addition of an excess of neutral potassium oxalate. Calcium phosphate is precipitated when alkali is added to urine; part of the acid (acid phosphate) is therefore removed, so that it is not included in the acid determined by this titration. When a large excess of oxalate is present, the calcium combines with it instead of with the phosphate, and all the acid in the urine can be determined by titration.

The reaction (hydrogen ion concentration) was determined by a method approximately the same as that recently described by Marshall.[5] A series of tubes was prepared, each of which contained 20 c.c. of a solution whose reaction (hydrogen ion concentration) was known; the differences between the reactions of the solutions in the different tubes was small (0.2 or in some cases, 0.1 p_H); to each of these tubes a measured amount of an appropriate indicator was added. For each indicator there is a definite reaction at which it shows a maximum development of color, a range of differences in reaction over which it shows differences in tint; these facts determine the appropriate indicator to use in estimating the hydrogen ion concentration in any given range. The indicators used in this work were methyl red for the distinctly acid range, brom cresol purple for the slightly acid range, and phenolsulphonephthalein for the neutral to alkaline range. Ten cubic centimeters of the urine under examination was diluted to 20 c.c. with distilled water, and the amount of indicator used in the standard tubes was added. The diluted urine plus indicator was then compared with the series of standard tubes in an apparatus (comparator block) designed to correct for the color of the urine. In no instance were urines found outside the range of the indicators used in the standard tubes, but it was often necessary to carry through more than one determination because the correct one of the three indicators was not chosen at first.

TABLE 2.—MAXIMUM AND MINIMUM VALUES

Time	Reaction Max. p_H	Reaction Min. p_H	N/10 Acid per Hour Max. C.c.	N/10 Acid per Hour Min. C.c.	Volume Max. C.c.	Volume Min. C.c.
7-9	4.8	6.4	28.2	2.9	245	10
9-11	4.9	7.1	23.3	4.3	205	9
11-1	4.9	7.7	25.3	3.7	325	10
1-3	5.0	6.7	29.7	0.75	143	11
3-5	4.9	7.7	25.0	1.5	208	11
5-7	4.9	8.0	21.6	2.1	173	13
7-7	4.9	6.4	20.1	7.1	92	12

This use of different indicators for different reactions is familiar. Many samples of urine are alkaline to litmus but are acid (not alkaline) to phenolphthalein. Again, specimens of gastric juice, especially from patients with achylia, are often alkaline to Töpfer's reagent which are acid to phenolphthalein.

The three tables show the results of the determinations made in this series. The first table shows the average values of the reactions, amount of acid excreted per hour, and of the hourly volumes of urine of all specimens collected during the different periods; the second table shows the maximum and minimum values of the amount of acid, reaction, and volume found for any specimen collected during each period; the third table shows the number of specimens which showed different reactions, arranged in groups not varying from each other by more than 5.0 p_H and the times during the day when these specimens were voided. The amount of acid is expressed as the number of cubic centimeters of tenth normal acid which

TABLE 3.—SPECIMENS THAT SHOWED DIFFERENT REACTIONS

Reaction Range p_H	Total No.	Time 7-9 No.	9-11 No.	11-1 No.	1-3 No.	3-5 No.	5-7 No.	7-7 No.
Above 5.0	10	1	1	1	1	1	2	3
5.5-5.0	58	9	6	8	11	6	10	8
6.0-5.5	33	5	6	4	4	3	4	7
6.5-6.0	23	5	4	1	3	7	1	2
7.0-6.5	8	0	2	4	1	1	0	0
7.5-7.0	5	0	1	1	0	1	2	0
8.0-7.5	3	0	0	1	0	1	1	0

1. Hubbard, R. S., and Munford, S. A.: A Comparison of the Alkaline Tide in Urine, with the Results of Fractional Gastric Analysis, Proc. Soc. Exper. Biol. & Med. **19**: 429, 1922; The Excretion of Acid and Ammonia, J. Biol. Chem. **54**: 465, 1922.
2. Benedict, A. L.: "The 'Alkaline Tide' in Urine," J. A. M. A. **79**: 2021 (Dec. 9) 1922.
3. Hubbard and Munford (Footnote 1, second reference).
4. Folin, Otto: Laboratory Manual of Biological Chemistry, New York, 1916, p. 103.
5. Marshall, E. K., Jr.: The Effect of Loss of Carbon Dioxide on the Hydrogen Ion Concentration of Urine, J. Biol. Chem. **51**: 3 (March) 1922.

were excreted in an hour, and the volume as the number of cubic centimeters of urine which were eliminated during the same period. The reaction is expressed as "p_H", that is, as the negative logarithm of the actual hydrogen ion concentration. The figures representing hydrogen ion concentrations are fractions with very large denominators, and the negative logarithms of the values have been accepted as a convenient way in which results may be recorded. The values of this expression increase as acidity decreases (or as alkalinity increases), and decrease as acidity increases.

Table 1 shows the presence of the alkaline tides. The reaction was less acid (more nearly alkaline) during the forenoon and afternoon periods than it was in the morning, at night, or during the period which corresponds to the time when the noon meal was taken. The average figures for the amount of acid excreted show a similar decrease in the morning and again in the afternoon. The change in the afternoon was slight, possibly because the acid produced from the catabolism of the food taken in the morning obscured the tide. The figures for the average volumes of the specimen show that this change in the amount of acid was independent of changes in volume, for during the forenoon period, when the amount of acid excreted showed a marked decrease over that excreted in the morning, the volumes of the specimens increased.

Table 3 shows that the number of specimens which showed alkalinity or decreased acidity increased during the forenoon and afternoon periods, as did the average alkalinity of the specimens. There were only eight samples out of the 142 collected which gave an alkaline reaction—that is, which showed a p_H greater than 7.0, the reaction of absolutely pure (negative conductivity) water. These specimens would all have given an alkaline reaction with litmus; but only one of them, which showed a p_H of 8.0, would have given a slight pink color if tested with phenolphthalein. Specimens were not tested with phenolphthalein; the satements just made are based on the tables given on page 74 of the war manual.[6]

A study of the average values of the reactions, and hourly excretion of acid in these cases, and of the times at which alkaline and nearly alkaline specimens of urine were voided shows that the reduced acidity following meals, commonly known as the "alkaline tide," was shown. This accords with the observations made by many others.[2]

6. Laboratory Methods of the United States Army, Medical War Manual 6, Philadelphia, 1918.

Correct Estimate of One's Own Surroundings.—It is so difficult to form any correct estimate of one's own surroundings, largely on account of our very familiarity with them, that historical students have generally evaded this responsibility. They have often declared it was impossible to do so satisfactorily. And yet no one will ever know more than we about what is going on now.—Robinson: The Mind in the Making.

CYSTIN CALCULI: A COMPLEX SURGICAL PROBLEM

REPORT OF CASE OF MULTIPLE CYSTIN CALCULI *

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Cystin calculi are comparatively rare. Until 1882 only fifty cases of cystinuria had been reported in the literature. Kretschmer,[1] in his comprehensive study of the subject of cystinuria and cystin stones, found reports of only 107 cases of the stones, including two cases of his own, which occurred in twin boys, aged 9 years. The chemical examination of these two cases demonstrated that they were pure cystin, the diagnosis having been made in each case before operation. Both patients had vesical stones.

Watson and Cunningham [2] report one case of cystin calculus in thirty-two cases of cystinuria, Morris,[3] two in seventy-seven, and Sir Henry Thompson three in 114 cases. That cystinuria is a constitutional problem and the etiologic factor in cystin calculi is well known.

According to Abderhalden,[4] "the metabolism of the cystinuria patient is always normal, and urinary stones are frequently found in the disease." That these stones may be multiple and located in several portions of the urinary tract simultaneously is quite evident from the case here reported.

Fig. 1.—Twelve cystin stones from right ureter.

Cystinuria tends to run in families, there having been found in twenty-two cases compiled by Poland a group of ten occurring in four families. The disease has also been found in three successive generations.

From the diverse views appearing in the literature, it is evident that there is little known as to the etiology of cystinuria, and much confusion as to the frequency and character of stones occurring in this disease.

Kayser [5] says:

> I can find no figures showing the relation of cystinuria to cystin calculi, but the impression is that it is usually accompanied by calculus formation. This may be due to the fact that the cases unassociated with calculus formation escape notice, as the metabolic error seems to be accompained by no other serious or constant complication.

The case here reported is presented with the hope that it may be an aid in the final solution of this intricate problem.

REPORT OF CASE

Miss R. B., aged 21, was referred by Dr. T. R. Love for acute appendicitis, with a provisional diagnosis of cystinuria

* Read before the Western Surgical Association, Minneapolis, Dec. 8, 1922.

1. Kretschmer, H. L.: Cystinuria and Cystin Stones, Urol. & Cutan. Rev. **20**, No. 1 (Jan.) 1916.
2. Watson, F. S., and Cunningham, J. H.: Diseases and Surgery of Genito-Urinary System, Philadelphia, Lea & Febiger **2**: 107, 1908.
3. Morris, Henry: Surgical Diseases of the Kidney and Ureter, Chicago **2**: 58, 69, 1901.
4. Abderhalden, Emil: Further Contribution to the Knowledge of Cystin Ocurring in the Urine and Urinary Stones, Ztschr. f. physiol. Chem. **104**: 129-132, 1919.
5. Kayser, L. D.: Personal Communication to the author.

on account of the presence of cystin in the urine. Her average weight was 119 pounds (54 kg.). The family history was unobtainable, as she had been adopted when an infant. Menstruation began at 14 years, and was regular, of twenty-eight day type; the flow was profuse for six or seven days, with much clotting. The patient was always delicate as a child,

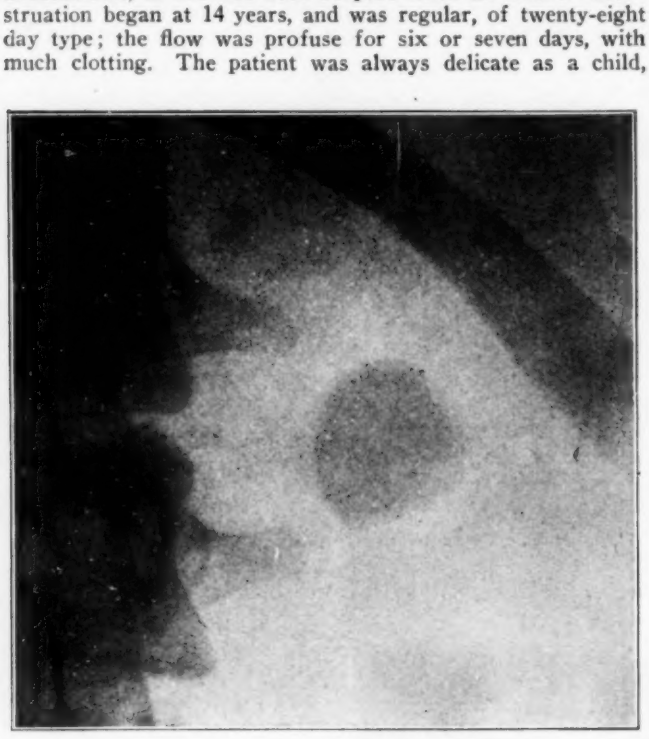

Fig. 2.—Cystin stone in left kidney.

being bottle fed and having malnutrition in infancy. She had not been active, and did not play as other children. She passed blood in the urine several months at the age of 4 and again at 10. The appetite was usually good. She was especially fond of meat, but ate no butter, or milk containing cream. For several years she had had painless swelling of the feet and ankles. She had influenza in 1918. In the early part of 1919 the left foot and ankle were in a cast for several weeks. For the last year she had had a feeling of distress (pain) in the right side. The eyes filled with tears occasionally during urination, but there were no other urinary symptoms except the hematuria noted. There were no gastric symptoms, and no constipation or diarrhea. The patient usually drank only a little water. June 24, 1921, she was taken with severe pain in the right side, but no nausea or vomiting. The pain gradually became worse, although the temperature and the leukocyte count were within normal limits. Rigidity was well marked, and was high up and far out to the right, suggesting a retrocecal appendix since it was too far out for the ureter. Cystin crystals had been found in the urine, but on account of the location of the pain and the fact that the patient kept her right leg elevated for comfort, the diagnosis of appendicitis seemed more reasonable than that of cystin calculus.

The abdomen was opened by a median incision. Fluid escaped, and a moderately acutely inflamed appendix was removed. A series of twelve stones was palpated in the right ureter, extending from a point 2 inches above the brim of the pelvis downward to the ureterovesical junction. As the patient was in good condition, an intraperitoneal opening was made into the ureter, and with light common duct forceps, ten stones, each approximating 1 cm. in diameter, were removed. Two at the ureterovesical junction beyond reach were pressed upward, along the ureter, by the hand of an assistant placed in the vagina. When they came within reach of the operator's hand within the abdomen, they were stripped upward to the opening, from which they were successfully removed (Fig. 1).

A probe passed upward within the lumen of the ureter then disclosed a stone in the right kidney, which on palpation gave evidence of being of unusual size and located above the pelvis of the kidney. Further operative work was not done at this time. The ureter was closed; the ureteral mucosa was infolded and sutured with plain catgut; the margins of the peritoneal coats were everted and also sutured with plain catgut. A strip of soft rubber dam was then placed in close apposition to this sutured area, but not in contact with it, and the abdomen was finally closed. The rubber drain was removed on the fourth day, and the wound healed by first intention as though merely an interval appendix operation had been performed. The patient returned home on the fourteenth day.

The pathologist, Dr. W. S. Dennis, reported a mild grade of acute appendicitis, and stated that the twelve calculi were composed of a central core with two distinguishable layers surrounding them. The layer adjoining the core was

BLOOD CHEMISTRY

	Mg. to 100 C.c.	Normal
Nonprotein nitrogen	33.3	30 to 35
Urea nitrogen	20.0	12 to 15
Creatinin	1.0	1.25
Sugar	80	80 to 100

yellowish gray, while the outer layer was more grayish and slightly rough. The consistency of the mass was uniform, and was easily scraped with a knife blade. Chemical analysis of the two layers and central core revealed that the scrapings burned on platinum with a bluish flame and gave off a sharp odor. The scrapings were dissolved in ammonia, and on evaporation of the ammonia, six sided, thin, transparent crystals formed which, morphologically, were identical with cystin crystals. The total weight of the twelve stones was 14 gm.

Following this, a series of roentgenograms of both kidneys and ureters was made, one stone being found in the left kidney and two in the right with both ureters negative (Figs. 2 and 3).

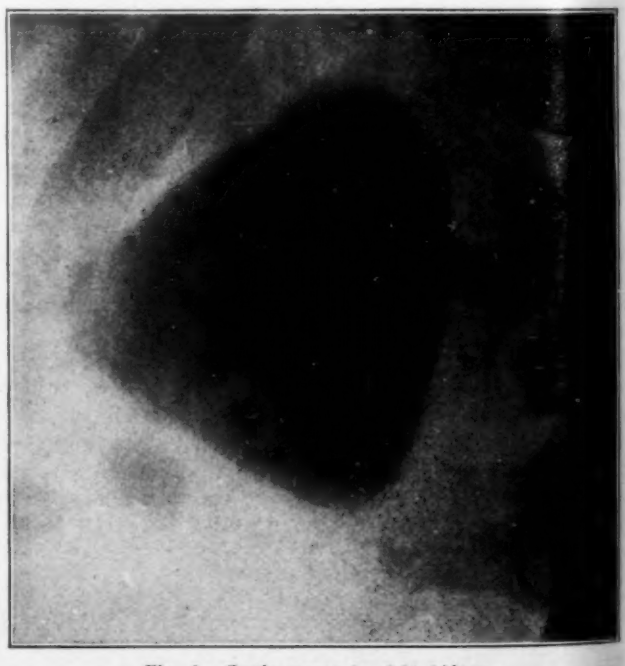

Fig. 3.—Cystin stones in right kidney.

Plans were then made for the removal of the stones from both kidneys. Feb. 12, 1922, a blood chemistry and phenolsulphonephthalein test was made for the purpose of operating on the better functioning kidney first. The phenolsulphonephthalein test resulted in elimination of 20 per cent. from the left kidney in thirty minutes, and less than 5 per cent. from the right kidney in the same length of time.

At this time her weight was 108 pounds (49 kg.), and she was complaining of weakness and sleeplessness, with a drawing sensation in both flanks when urinating, but without smarting and burning. There was constant pain and soreness in the area over both left and right kidneys and in the back, and constipation had prevailed since the first operation. She had been on a limited protein diet, hoping by this means to curb further cystin concretions.

She returned to the hospital, February 14, and a stone was removed from the pelvis of the left kidney through an opening in the kidney pelvis. This was quite difficult, owing

Fig. 4.—Cystin stones from right kidney, weighing 50 gm.; smaller cystin stone from left kidney, weighing 9 gm.

to the size of the stone, and a piece of fascia and fat was used as a flap to cover this rent in the pelvis after it had been sutured with plain catgut. Drainage was used and continued for ten days, the incision finally closing on the fourteenth day. The patient returned to her home on the seventeenth day.

Although thirteen stones had already been removed from the right ureter and the left kidney, a problem was still present in this case, because of the large and medium sized stones remaining in the right kidney, and a right renal efficiency which had been very low.

The left kidney was now coming up to its normal functional test, however. April 22, the patient was again placed in the hospital for her final operation, and the same Mayo incision was made on the right side as had been made on the left, care being taken to duplicate the curve in order that there might be symmetry in the scars. The right kidney was then exposed.

In this instance it proved necessary to remove the two stones from the cortex of the kidney, as these stones were located in this portion of the right kidney. A vertical incision was made from the convex border on the posterior aspect down to the pelvis. The cortex here was but one-fourth inch in thickness, owing to the enroachment of the stones on the parenchyma.

Delivery of the stones was easily made, the capsule sutured with plain gut, and drainage instituted as before, the patient leaving the hospital, May 1, eight days after the operation. All discharge disappeared after the thirteenth day (Fig. 4).

Only once during any of the operations did the temperature go above 101, and this occurred on the third day after the appendectomy and the simultaneous removal of the ureteral stones. This fact would suggest that operation in cases of cystin calculi can be done with reasonable safety, since cystin calculi are due to perverted metabolism and are not associated with or the product of infection.

The left kidney stone weighed 9 gm., the right kidney stones, 50 gm., and the right ureteral stones, 14 gm., a total of 73 gm.

Since the third and last operation, I find that the urine still carries heavy deposits of the cystin crystals. Three major operations on a woman, aged 21, for the removal of fifteen large stones, involving both kidneys and one ureter, constitute, in my judgment, a complex surgical problem.

Empire Building.

AN UNUSUAL CASE OF TRAUMATIC URETHRAL STRICTURE*

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The treatment of injuries to the urethra is one of the most interesting fields of the surgery of the genito-urinary tract, and it is well recognized that there are few cases which require a nicer choice of operative procedure and, especially, more careful postoperative treatment, if satisfactory and permanent results are to be obtained. In most of these cases, the diagnosis is, of course, self-evident, and the extent and location of the injury can be accurately determined by simple diagnostic methods, so that the indications for operation are usually quite definite. The aim of the operation should, of course, be complete restoration of function with a minimum of scar tissue formation. Cicatricial contraction along the course of the urethra is very difficult to prevent, and it is the chief cause of the disappointing results which so often follow operation in this type of case.

When a recent injury to the urethra is first seen, it is most important to determine, as far as possible, the exact extent of the injury and any existing complications. Injury to the urethra, however, is usually accompanied by injuries to other nearby structures, and, in the majority of cases, instrumental examination is quite impossible. Prompt operative interference should be undertaken at once to control the spread of extravasation; attempt should be made to repair the torn urethra, and ample provision for drainage must be provided.

The after-care of the wound requires constant and painstaking attention, if one is to avoid excessive formation of scar tissue, which so often leads to dense traumatic strictures of the urethra. Infection must

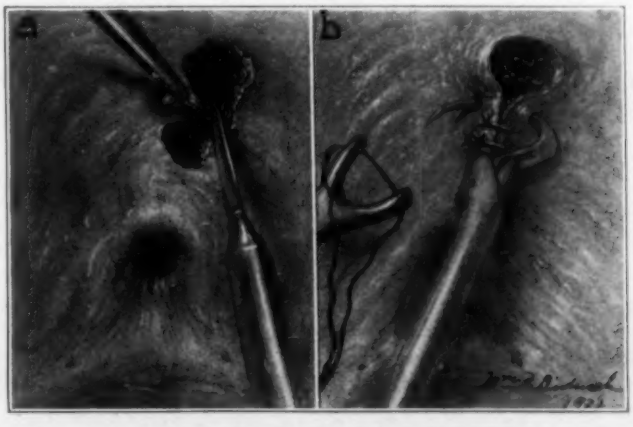

Fig. 1.—*a*, excision of margins of fistulas and intervening septum; *b*, closure of vesical orifices of fistulas in two layers.

be actively combated, and every effort must be made to establish normal flow of urine through the urethra and to avoid a persistent perineal fistula, which, together with infection, is one of the most important factors in the production of scar tissue. Frequent irrigations of the perineal incision and of the fistula with the new mercurial antiseptic solutions, such as mercurochrome-220 soluble or potassium permanganate, has, in our experience, led to a much more rapid healing

* From the Brady Urological Institute, Johns Hopkins Hospital.

of the incision and closure of the fistula, provided, of course, that the urethra has been properly repaired.

In cases of long standing traumatic stricture, great care must be exercised to obtain as much preoperative knowledge as possible in regard to the nature and the extent of the injury. In most of these cases, however, the urethra will be found to be impermeable, so that instrumental examination and endoscopic and cystoscopic studies are impossible, and the operator must be guided almost entirely in his choice of procedure by the operative findings.

Most commonly, a constricted, tortuous urethra is found at operation, the extent of the stricture depending on the injury and on the amount of scar tissue present. In these cases, increasing difficulty in urination, and sometimes complete obstruction, is invariably present. Incontinence following trauma to the urethra results usually from a very extensive injury which has involved both the internal and external vesical sphincters, with either destruction of these sphincters or their fixation in scar tissue. A recent unusual case of incontinence following extensive injury to the urethra, in which the true cause of the incontinence was not recognized prior to operation, presented many unusual and instructive features, and the excellent result obtained is an illustration of what can be accomplished by the proper choice of operative procedure and by painstaking after-care. This case has already been briefly reported by Dr. Young,[1] but the later history of the case is so instructive that a more detailed report has been undertaken.

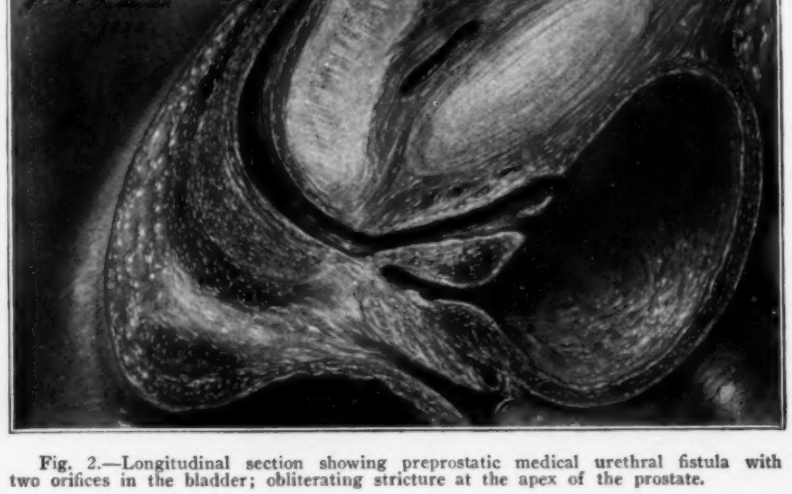

Fig. 2.—Longitudinal section showing preprostatic medical urethral fistula with two orifices in the bladder; obliterating stricture at the apex of the prostate.

REPORT OF CASE

History.—J. F., referred, March 17, 1922, complaining of incontinence of urine following an injury sustained three years previously, gave no history of venereal disease and had never had any urinary symptoms prior to his injury. In November, 1919, while following his occupation as telephone lineman, a pole fell with him, with a resultant fracture of the right ischiopubic ramus and severe injury to the perineum. An external urethrotomy was done immediately, and the bladder was drained by a perineal tube. A persistent perineal fistula and complete incontinence of urine resulted, so an external urethrotomy was performed in May, 1921. As a result of this operation, the perineal fistula closed temporarily, but incontinence persisted. The fistula, however, soon reopened and for the last four months the patient had had increasing difficulty in starting urination, with overflow incontinence. During this time, he had been using a catheter almost daily and had noticed more and more difficulty in introducing it. Sexual power had been destroyed as a result of the accident.

Examination.—The patient was a sparely nourished but healthy looking man. No abnormalities were revealed on general physical examination. The external genitalia were normal. In the perineum, there was a broad scar midway between the anus and the scrotoperineal juncture, in the center of which was a raised projection of granulation tissue about a small fistula.

On rectal examination, no abnormalities were noted except marked adhesions and infiltration about the membranous urethra and the apex of the prostate.

A catheter met some irregularity in the prostatic urethra but finally passed, and found 300 c.c. residual urine. The bladder was filled with thorium solution, and the cystogram revealed a large dilated bladder, with regurgitation of the solution into the posterior and anterior urethra. With the patient standing, the fluid dribbled out of the urethra, and he was in no way able to control it.

On cystoscopic examination, study of the vesical orifice revealed a smooth and normal outline anteriorly, to the left and posteriorly. On the right side anteriorly, an irregular cleft was seen, and it was possible to draw the cystoscope out into the urethra for a distance of several centimeters and still get a good view of the surface. Numerous ridge-like projections were seen in this cleft, the whole giving the appearance of an old contracted scar. The trigon was not seen. The bladder mucosa, aside from slight trabeculation, was normal.

As a result of the cystoscopic findings, it seemed evident that as a result of the accident, the internal sphincter had been torn completely through on the right side of the orifice.

Operation.—Suprapubic cystostomy was undertaken, March 23, 1922, with the object of repairing the injury to the internal sphincter. With the bladder opened, two orifices were immediately encountered on the anterior bladder wall, separated from one another by a thick bridge of tissue. About 2 cm. below the lower orifice another opening was found, which was readily recognized as the true prostatic orifice. The trigon could now be seen in proper relationship, and the ureteral orifices identified and seen to function. These relations can be plainly seen in Figure 1*a*. With the finger in the true orifice, it was found to end blindly about 2 cm. from the surface. A large sound introduced through the urethra entered the bladder through the lower of the two anterior openings. This sound was gradually removed until its tip could be felt by the finger in the blind prostatic urethra, from which it was separated by a fairly thick septum of tissue. This septum was incised and the sound forced through, thus joining the anterior to the blind posterior urethra somewhere in the region of the apex of the prostate.

The urethra thus reconstructed was dilated to No. 30 F.; as much as possible of the scar tissue at the site of the junction was excised, and a large catheter was fixed in place in the urethra. The bridge of tissue between the two anterior openings was then excised and the fistulous tract followed down to the urethra, with which it was continuous in the region of the apex of the prostate. This tract was then excised as thoroughly as possible with knife and curet, and closed, as shown in Figure 1*b*, by two layers of chromic catgut. The placing of the deeper sutures would have been impossible without the use of the boomerang needle, described by Dr. Young.[2] The bladder was then closed in the usual way about a large tube.

Outcome.—The postoperative convalescence was somewhat slow, but urination without obstruction and with perfect con-

1. Young, H. H.: The Operative Cure of Incontinence of Urine, with Illustrated Cases, J. Urol. **8**: 361 (Nov.) 1922.

2. Young, H. H.: An Operation for the Cure of Incontinence of Urine, Surg., Gynec. & Obst. **28**: 84 (Jan.) 1919.

trol was established on the thirty-first day. The urethra was dilated at intervals. Following one of these treatments, a right epididymitis developed, which further delayed progress.

The patient was discharged, June 16, fifty-four days after operation, with the suprapubic wound still leaking small amounts of urine at intervals. He was able to void with perfect control and without difficulty about every four hours.

It was evident that, as a result of the accident, the urethra in this case had been torn completely across somewhere in the region of the apex of the prostate. At the same time, a tear had occurred in the bladder wall, the urine finding its way out through this avenue, and, in the process of cicatrization, this fistulous tract had become connected with the anterior urethra. In the meantime, the prostatic urethra had been completely obliterated by scar tissue. These relations can be best seen in Figure 2.

The subsequent history of this case is of especial interest, as it so well illustrates the difficulties which may occur from contraction of the scar tissue which had been left in the region of the membranous urethra.

At the time of operation, the question of the advisability of doing an external urethrotomy with resection of scar tissue was considered, but, on account of the duration of the operation and the probability that the urethral constriction could be controlled by subsequent dilation, it was considered best to do nothing further.

Subsequent History.—A few days after the patient arrived at his home, the suprapubic fistula closed, and the patient was in excellent condition for several weeks. He then began to experience increasing difficulty in urination, and the fistula reopened at intervals. The urinary stream became smaller and smaller, and the patient had several attacks of acute retention, which were relieved by the opening of the fistula.

He returned to the hospital, September 19. Examination revealed the presence of a small suprapubic fistula in the middle of the old scar. The patient was able to express a few drops of urine through the urethra by straining, but a filiform encountered a dense stricture in the region of the membranous urethra and could not be introduced into the bladder.

Second Operation.—September 20: External urethrotomy was performed in the usual manner, following the technic described by Cecil,[3] in which methylene blue is used as a urethral injection to faciliate the exposure of the tortuous urethral canal. The operation was rendered somewhat more difficult by the fact that the usual landmarks of the perineum were distorted by scar tissue. As much as possible of this scar tissue was excised, and the urethra was reconstructed over a large catheter introduced through the anterior urethra into the bladder.

Outcome.—Following operation, the patient made an uninterrupted recovery, and the suprapubic fistula closed firmly in a few days. After removal of the catheter on the seventh day, the patient was able to void a stream of normal size and force, and a small perineal fistula healed on the fifteenth day.

Cystoscopic examination revealed a normal prostatic orifice, with slight hypertrophy of the trigon. The ureteral orifices were normal, and the bladder mucosa showed slight trabeculation, with depressed scars in the region of the suprapubic incision.

The patient left the hospital on the twenty-fourth day, with suprapubic and perineal wounds firmly healed. He was able to void a good stream of urine at normal intervals.

In a letter received three months after operation, the patient states that he has had no further difficulty in urination, has normal control and has been able to take up his former work.

3. Cecil, A. B.: A Method of Performing External Urethrotomy in Impassible Strictures, J. A. M. A. **60**: 1606 (May 24) 1913.

COMMENT

This case was most instructive to all who saw the patient. The distressing nature of the injury had had a marked psychic effect on him which rapidly disappeared with the restoration of normal urinary flow. A permanent ultimate result was not obtained until the urethra had been freed by the excision of the excess of scar tissue by which it was constricted.

It is interesting to note that there had been a total destruction of the patient's sexual powers as a result of the accident. This phenomenon was probably caused by laceration of the nerves in the posterior sheath of the prostate and by direct injury to the verumontanum and ejaculatory ducts. Although the patient reported a distinct improvement, it seems probable that a complete restoration of normal sexual function cannot be expected, in view of the extensive injury which had been suffered by the prostate, ejaculatory ducts and verumontanum.

THE TREATMENT OF OLD, UNUNITED FRACTURES OF LONG BONES

WITH SPECIAL REFERENCE TO THE USE OF THE OSTEOPERIOSTEAL GRAFT *

HENRY BASCOM THOMAS, M.D.
CHICAGO

Of the great number of factors of importance in the technic of transplantation in ununited fractures of long bones, only four will be mentioned here:

1. The length of time which should elapse between the healing of a compound infected fracture and the time of transplantation.
2. A method of fixing a transplant in selected cases without screws, pins or suture.
3. The use of the periosteal-compacta transplant, or wafer graft.
4. The care of the hard ends of an old ununited fracture.

WHEN TO TRANSPLANT IN FORMERLY INFECTED WOUNDS

It is said that mild infection stimulates osteogenesis and thus favors repair; but the latent infection present in the majority of cases of healed compound ununited fractures threatens the success of transplantation. If it is not molested by trauma or operative interference, it generally gives no trouble and will remain latent even when it is situated within or extremely close to the operative field. If it is cut or torn into, however, it is liberated from its encapsulation, a flare-up results, and in most instances the operative repair is a failure.

During the war it was at first considered safe to open a formerly infected fracture defect for repair six months after closure of the wound; but in many cases in which operation was performed at the end of that length of time by what was believed to be a faultless technic, severe infection resulted. Therefore, the time was extended to a year, and as a further precaution the operation was performed in two stages. In the first stage the bed was prepared for the transplant in the fractured bones and the wound then closed. A few days later—usually five, if all went well—the

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second stage, the placing of the transplant, was done. If infection set in, the wound was opened wide and irrigated with surgical solution of chlorinated soda (Dakin's solution). It was found that the prospects of success were greatly improved if, before the first stage of the operation, a greater blood supply was gained by removing all scar tissue and sliding thick, well-vascularized skin over the area thus denuded.

A case in which operation was performed successfully in the presence of unrecognized encysted infection was a fracture of the ulna treated by a stage operation at Camp Upton in March, 1919. The tentatively prepared sutured wound remained clean, and the transplant from the tibia was successfully placed. Three weeks after the operation the patient was sent to Plattsburg, and the operator was transferred to Fox Hills. Four months later, after a wrestling match which resulted in

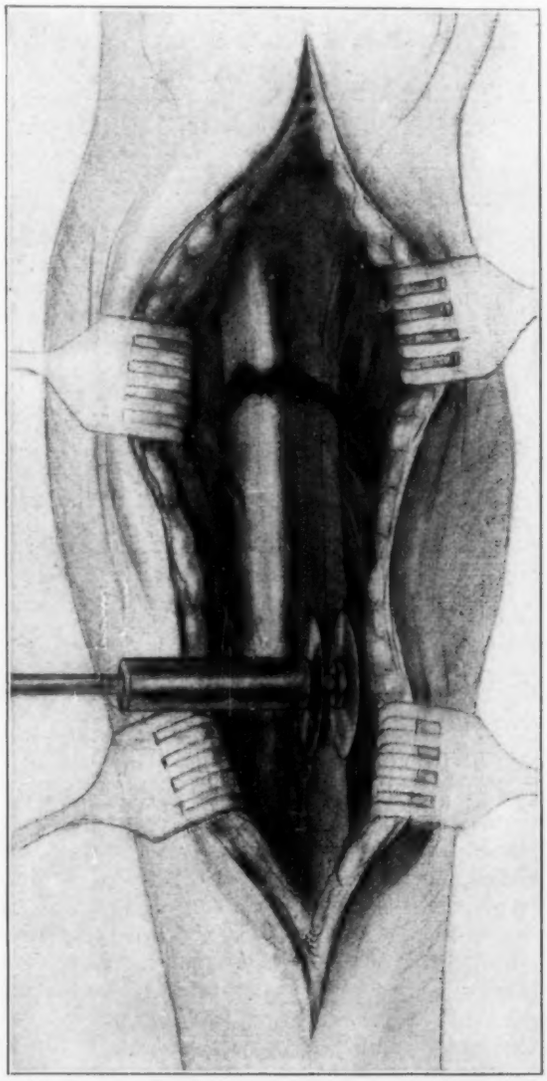

Fig. 1.—Double saw marking out the width of the proposed bed over and near the ends of the ununited fracture. The ebony bone has been only slightly disturbed in preparation. To remove this bone for the graft, the single saw is kept precisely on the guiding line so that the bed will be smaller than the graft. The graft is obtained by sawing on the outside of the guiding line. We could easily make a sliding graft here, using no bone from the opposite leg, but it would be loose-fitting, involving the use of screws, or wedges or pegs of bone for fixation, and would have the disadvantage of the presence of ebony bone. The wider tight-fitting bone from the opposite leg is therefore preferable.

fracture of the transplant in the arm and of the leg from which it had been taken, the patient was transferred from Plattsburg to Fox Hills. Exposure of the graft in a second two-stage operation revealed that one end was broken near its insertion in the radius. Very near this fracture, and within a quarter of an inch of the previous incisions, was a very small area of encysted pus which undoubtedly had been in the

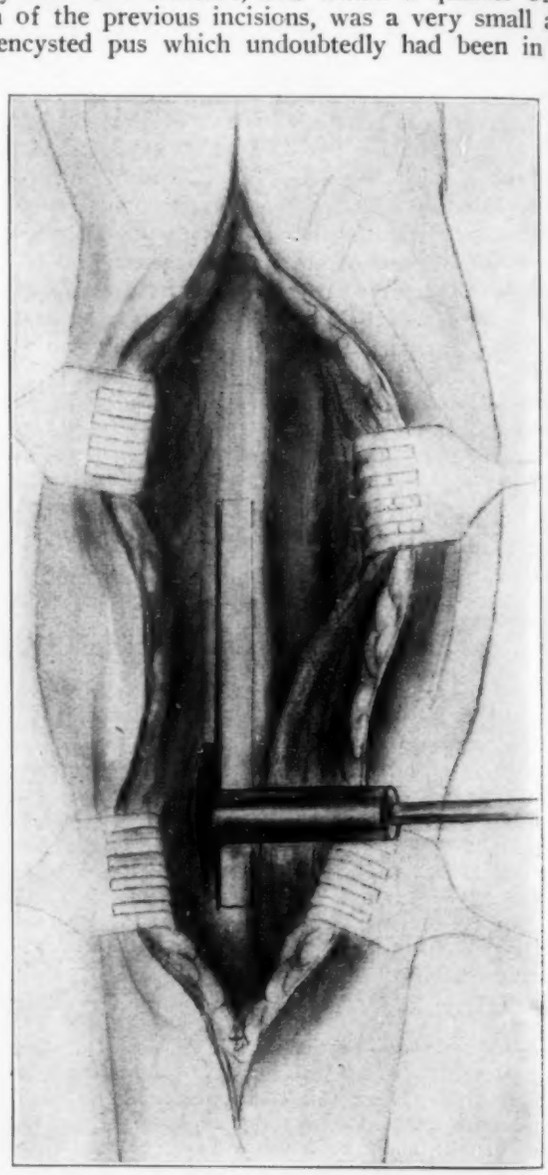

Fig. 2.—Single saw removing the graft as outlined by the double saw. The cuts are made outside the guiding lines. The cuts to free the ends and the opposite side will also be made in the same manner in order to make the graft larger in all dimensions than its bed.

field at the two previous operations but had not been disturbed either then or during the wrestling match.

After this experience, operation and manipulation in the preparation of transplant beds were restricted to the minimum. The ends of old fractured bones were no longer dug out, freed and exposed as formerly, unless this was strictly necessary. There was no cleaning away of old callus. One fourth of the surface of the bone was exposed very gently and with the least possible disturbance of the surrounding soft tissues and bone callus. By such a technic, virulent bacteria were not released, and the successful results of operative bone repair were greatly increased.

TRANSPLANTS IN SELECTED CASES FIXED WITHOUT SCREWS, PINS OR SUTURE

In the effort to reduce the trauma of the tissues to the minimum, attempts were made also to avoid the

boring of holes for sutures, pegs or screws with which to fix the transplant. In making the bed for the transplant, the exact size of the proposed graft was marked out superficially with the twin saw (Fig. 1), and these markings were followed exactly with the single saw (Fig. 2). In taking the graft we varied the technic by guiding the single saw along the outer border (Fig. 3) of the lines marked off by the twin saw. The resulting graft was therefore slightly broader than its bed, and could be forced into it so snugly that no further fixation was necessary. The success of this technic was particularly gratifying in those cases in which the ends of the fractured bones were old and hard, but in fair to good alinement. The hard bone made a bed with strong side walls between which the graft could be forced safely and tightly.

Fig. 3.—*A*, the slightly wider and longer graft, placed in its smaller bed, is wedged in; no screws, pegs or side chips are needed; *B*, removal of the periosteal wafer graft from the upper inner side of the tibia.

THE OSTEOPERIOSTEAL OR WAFER GRAFT

Of great value in stimulating osteogenesis, especially in the neighborhood of ebony bone, is the periosteal-compacta, or wafer graft, a graft of periosteum with a thin layer of the underlying bone. It was my pleasure to see Chutro use this method of bone repair when he worked in New York City for the government at the close of the war. The results in war wounds were most gratifying.

Such a graft can often successfully take the place of a bone transplant, thereby eliminating much trauma and decreasing the chances of infection.

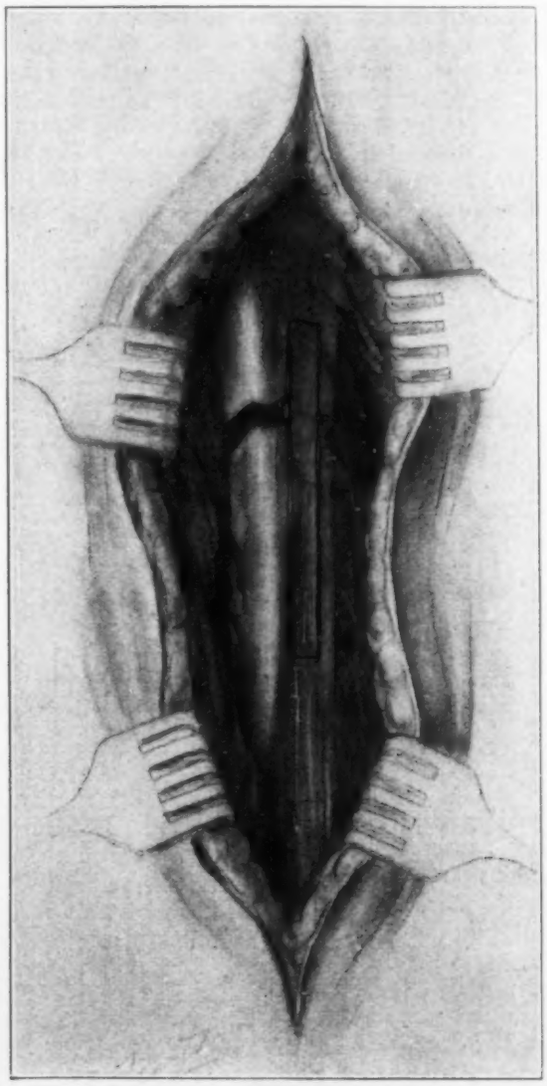

Fig. 4.—An insert placed in its bed. Insert was sawed by the same twin saw set exactly as it was in making the bed. The insert is loose and needs suturing, pegging or screwing. Note chips of bone placed between the edges of the bed and the transplant. Sutures and pegs are often employed also to immobilize when the graft is smaller than its bed.

According to Delagénière,[1] the idea of repairing losses of bony substance by means of a periosteal graft was due to Ollier, who reported a case of transplantation of a piece of tibial periosteum in 1835. Ollier failed to obtain the results obtained today because, in stripping the periosteum, he robbed it of some of its osteogenic cells, and placed it under abnormal physiologic conditions. In present practice a strip of the underlying bony tissue is taken with the periosteum.

An excellent area from which to obtain such a graft is the anterolateral inner side of the upper third of the tibia (Fig. 4). The outline of the graft is made with a bistoury, and the graft is then removed with a chisel,

1. Delagénière, H.: Repair of Loss of Bony Substance and Reconstruction of Bones by Osteoperiosteal Grafts Taken from the Tibia (with 118 New Personal Cases), Am. J. Surg. **35**: 281 (Sept.) 1921; Greffes ostéopériostiques: technique et applications, J. de chir. **17**: 305 (April) 1921.

its thickness being controlled by inclining the chisel more or less toward the center of the bone. Care must be taken not to hold the chisel obliquely enough to loosen the bony lining, or perpendicularly enough to penetrate the bony canal.

The graft may be laid over a bony defect, such as an ununited fracture with loss of bony substance, applied over and around the ends of a transplant where it is attached to the host bone, or placed over the entire transplant, including its body, so that it spreads over the area of lost bone and covers the ends of the transplant where they are fixed (Fig. 5). The wafer graft has been used frequently also for repair when the transplant bridging the gap between the fractured ends of two bones has been broken from one of its attachments or pulled out from a medullary bed. Instead of traumatizing the tissues in an attempt to unite the end of the transplant to the fractured bone, the graft is laid over the gap and, if it is easily done, applied also around the faulty area. The limb is then fixed by plaster of Paris.

Delagénière [2] states that in the roentgen-ray examination, after the graft has been put into place, the two bony extremities are first seen to be separated by a clear space. In about a month there appears a clouding, in the center of which is a bony track which resembles a twisted cord stretched between the fragments. In rapid cures the bone requires about two or three months to resume a normal outline; in slow cures, about six months. The new bone secreted by the graft takes the form of the graft. When ossification is complete, the new bone seems to resemble that which it has replaced. The clinical evolution of the case is equally interesting. After the operation, the skin and tissues have an inflamed appearance if the wound has not been drained. In a few days the inflammation is confined to the limits of the graft. The wound is then united as an ordinary wound, and the graft grows normally. If the wound is drained, all that flows out is a little blood mixed with lymph. In 200 cases in which this type of graft was used, Delagénière has not seen a single case in which the graft was absorbed.

Fig. 5.—The placed wafer graft of periosteum with its attached compacta. It covers the ebonized ends of the ununited fracture. It also covers the transplant as shown in Figure 3 *a*.

Imbert and Jourdan [3] state that in two pieces examined by them after twenty and thirty days, respectively, in cases in which the bony tissue and periosteum remained alive, the appearance of the transverse cut of the graft was somewhat like that of spongy tissue. The haversian spaces had small medullary cavities. The bony canals were often deprived of their osteoblasts, and the bony corpuscles were gone except near the periosteum. These medullary cavities were enclosed by numerous polykaryocytic cells in the sinus which fringed the cross section of bony canals. At certain points, veritable nests of these cells were found under the periosteum. It was evident that in the process of extracellular digestion, which appeared to be the activity of these cells, the inclusion of the bony débris completed the destruction of the tissue. Imbert and Jourdan believe that in the osteoperiosteal graft the bony tissue is, in a way, a regression. Simultaneously, a bony tissue of new formation appeared under the periosteum. The building activity of the periosteum was shown by the line of osteoid tissue of the new formation which appeared at the border of the subperiosteal bony canals, and also by the osteoblasts which, arranged in series, lined the edges of these canals.

Chutro [4] and Dujarier [5] use the osteoperiosteal graft with the segmentary graft in certain cases of injury of the humerus and femur. Mauclaire, Gosset and Willems recommend its use in cases of loss of bony substance not exceeding 3 cm. Leriche and Policard [6] state that the only cases in which it is contraindicated are those in which it is necessary to maintain rigidity to hold the reduced bones in place, as in the humerus and femur. For all other cases, they consider it the best of all transplantations. Of 254 cases reviewed by Ramsdell,[7] the results were successful in 237, and partially successful in eleven.

2. Delagénière, H.: Méthode générale et technique des greffes ostéopériostiques prisés au tibia pour la reconstitution des os ou la réparation des pertes de substance osseuse, d'après 188 nouvelles observations personelles, avec présentation de blessés, Bull. et mém. Soc. de chir. de Paris **93**: 2288, 1917; Des greffes ostéopériostiques prisés au tibia pour servir à la reconstitution des os ou à la réparation des pertes de substance osseuse, en particulier pour réparer les pertes de substance du crane suite de trépanation et les pseudarthroses des membres (41 observations), ibid. **42**: 1048-1076, 1916; Des greffes ostéopériostiques prisés au tibia pour la réparation des pertes de substance osseuse et la reconstitution des os: Méthode générale, technique, et résultats d'apres 159 observations, J. de méd. et de chir. prat. **89**: 81-88, 1918.

3. Imbert and Jourdan: Sur l'état d'évolution de tissu osseux dans les greffes ostéopériostées, Compt. rend. Soc. de biol. **82**: 115-118, 1919.

4. Chutro, M. P.: Quelques cas de greffes osseuses du tibia et de l'avant-bras, Bull. et mém. Soc. de chir. de Paris **44**: 1331-1337, 1918.

5. Dujarier, C.: À propos de 17 cas de greffes osseuses, Bull. et mém. Soc. de chir. de Paris **43**: 1389, 1917; Des pseudarthroses des deux os de l'avant-bras, ibid. **45**: 327, 1919; Des pseudarthroses du membre inférieur, ibid. **45**: 582, 1919.

6. Leriche, R., and Policard, H.: Résultats eloignés de 19 transplantations osseuses de divers types, Lyon chir. **17**: 428, 1920.

7. Ramsdell, E. G.: The Delagénière Bone Graft, M. Rec. **94**: 776, 1919.

McWilliams[8] analyzed all graftings reported in the literature, and the results as indicated by the replies to a questionnaire. A comparison of the various methods of bone grafting shows definitely that the procedure that gives greatest promise of success is the osteoperiosteal method. The advantages of the latter, McWilliams thus summarizes: (1) increased likelihood of success of the grafting; (2) greater simplicity of technic in obtaining the graft, there being no necessity for the use of complicated motor saws; (3) less liability of fracture of the tibia from which the graft is taken.

Forgue,[9] professor of clinical surgery at the Faculté de médecine of Montpellier, also recognizes the superiority of the Delagénière graft in the majority of cases.

Would it not be wiser to keep in mind the special importance and adaptability of both the osteoperiosteal and the rigid autobone graft, each in particular cases? In this connection I agree with the opinion expressed by Cuneo and Rouvillois,[9] who hold that these two forms of technic should not be allowed to exclude each other but should rather supplement each other, and that, in complex cases, the more rational solution would be to combine the two methods, and to proceed in stages as developments indicated.

We must employ both methods, but we must select the osteoperiosteal or the rigid graft or both combined, according to the demands of the particular case.

THE CARE OF THE HARD ENDS OF OLD UNUNITED FRACTURES

The idea that there must always be thorough denudation of old ends of bone and removal of all cicatricial tissue is wrong, dangerous, and very often fatal to the good result sought. Many poor results due to overcautious preparation of the hard ends of old ununited fractures have taught us to be satisfied with only fair alinement of the bones, and frequently no denudation of fresh bone in or around the area in which the wafer graft is to be used. The army results with such preparation surprised us by the absence of infec-

Fig. 6.—Appearance in case reported, Aug. 30, 1920, four and one-half years after injury: Bismuth paste in soft tissues; infection in paste area; deformity of united fibula; ebony bone in ununited ends of tibia; loss of tibial substance; gap of considerable size.

Fig. 7.—Appearance, May 23, 1921, eight months after operation: Paste is gone; one tight-fitting bone graft from the opposite leg was placed in one side of the tibia to bridge the gap; a wafer osteoperiosteal graft from the opposite tibia was placed over the transplant and over the gap between the ends of the tibia; the planned second transplantation to support the opposite side of the tibia was abandoned; wafer graft has covered the gap; the growth is on very hard bone; the ebony bone was not removed; it was denuded.

Fig. 8.—Appearance from same angle in same case, Feb. 21, 1922, eighteen months from time Figure 6 was taken and ten months from time Figure 7 was taken. Patient walks without crutch or cane; no motion can now be produced in the tibia. It must be admitted that either the transplant or the graft or both have grown firmly in and about the ebony bone, and that the space between the fractured ends of the tibia at least look as though it were filling in with good bone.

8. McWilliams, C. A.: The Values of the Various Methods of Bone Graftings Judged by 1,390 Reported Cases, Ann. Surg. **74**: 286-293 (Sept.) 1921.

9. The Thirty-First French Congress of Surgery, abstr. J. A. M. A. **79**: 1532 (Oct. 28) 1922.

tion and flare-ups, the great osteogenic stimulation exerted by the wafer graft, the ability of the wafer graft to become a part of the ebony bone, and the efficiency of the wafer-graft bridge in gaps, even when no autogenous transplant was used.

POSTOPERATIVE CARE

The operating room application of the splint following open reconstruction, which, in some cases, may include bone grafting of fractures, is frequently neglected, though it is of great importance. Many are convinced, however, that it is the ability and patience to observe these points in the technic that make or mar the results. Those who do not have the inclination to see the case through postoperatively should not undertake the operative treatment. An example of careless management was that of a case of fracture of the femur. Excellent coaptation and alinement had been obtained, and the dressings applied. The surgeon then walked out, leaving the plaster fixation of the leg, a very important part of the work—considered by some the most important—to his assistant. Moreover, as the operation was performed on an ordinary operating table instead of a fracture table, it was necessary to move the patient after the operation and before the application of the cast. When this moving was done, the screws of the metal plate were ripped out so that overriding occurred. In such cases the patient cannot be blamed if he refuses to submit to a second necessary operation by the same surgeon.

A case of fracture is selected for report because it is in itself an example of the methods and technic here considered:

1. The removal of scar tissue and the use of the sliding skin graft to provide nourishment for a prospective superficial bone graft, as for example, a graft placed in a tibia.
2. Closure of a persisting osteomyelitic sinus.
3. Care of ebonized ends of an ununited fracture.
4. The employment of an autograft without pegs, screws or sutures.
5. The utilization of the osteoperiosteal graft as a support for the autograft.
6. The problem of muscle and joint fixation following the transplantation.
7. The presence of latent infection near the operative field. Its flare-up without damage to the transplant or to the osteoperiosteal graft.

Fig. 9.—Healed right leg, with multiple scars, and left leg, from which bone grafts were taken.

REPORT OF CASE

History.—A man, aged 24, sustained a severe compound infected fracture of both bones of the right leg in April, 1916. In November, 1920, the patient appeared healthy, and walked on the left leg with the aid of crutches. There was a discharging sinus over the junction of the upper and middle thirds of the right tibia which was surrounded by a large area of scar tissue. Motion and loss of bone substance in the tibia were apparent. The fibula had healed with overlapping, shortening, and the characteristic bowing which follows loss of bone in an ununited tibia when the fibula is normal or nearly normal and longer than the tibia.

The roentgen-ray examination substantiated the clinical findings, and revealed a considerable loss of tibial substance and a large mass of bismuth paste encysted in the soft tissues.

The usual laboratory tests, including the Wassermann test and a coagulation test, were negative.

Treatment.—The sinus was injected with methylene blue mixed in bismuth paste to give it body. The use of antiseptics, as advocated at some of the army hospitals, is not considered safe. (The color guidance for thorough dissection is more important than the disinfection, offers no danger, and usually meets all requirements.) A local anesthetic was used.

The walls of the sinus were dissected out, and the encysted mass of paste was removed. The presence of infection necessitated the introduction of a drain posteriorly and through new tissue. The scar tissue was dissected out, the skin undermined, and a sliding skin graft applied. Closure was effected through the aid given by a second incision 3 inches medial and parallel to the first, which allowed freer and fuller sliding of the skin. The small drain placed posteriorly from the bed of the encysted paste was taken out the fourth day. Healing followed. The sutures for the closure were removed the ninth day. Primary healing resulted.

Instead of waiting a year after closure for the walling off of all latent infection, we performed the grafting operation four months after the closure. There was no bone infection.

An incision was made on the tibia, and the ununited fracture was exposed, but the ends were not dug out or freed from their scar beds. One of the beds for the proposed transplants across the gap between the ends of the tibia was outlined with the double saw, but sawed with the single saw, the tissue being disturbed as little as possible. The second bed, which was planned at first to bridge the other side of the bone separation, was not made. It was decided during the operation to defer this transplantation.

The question now presented itself as to whether the operation should be continued or the wound closed for a few days, as indicated in most war wounds.

The good condition of the parts favored a one-stage operation. Therefore, the transplant was measured and marked out from the other tibia with the double saw, but sawed out with the single saw, and the cuts were made just outside the twin saw marks. The transplant was then transferred to the bed in the fracture and forced into place. It fitted snugly and needed no other fixation.

A wafer graft, 2½ by 3 inches, was then taken from the upper inner surface of the left tibia and laid over the entire field of the graft, over the ends as well as the space between the fractured bones, and tucked over the crest of the tibia and its posterior border. One or two sutures were used to hold it down.

The dressings were so made and so placed that when the window was cut in the cast for inspection of the wound and removal of the stitches, the delicate superficially placed grafts were not disturbed. The wound was closed with due care and respect for the grafts, and healed by first intention.

The leg, including the foot and knee, was enclosed in a properly fitting plaster cast extending to the trochanter, the knee being slightly bent.

The building of the cast met the requirements of proper reinforcements to facilitate window cutting and stability.

The Flare-Up.—Three months after the transplantations, there were indications of infection. The cast was still on.

Roentgenograms gave no indication of any bone infection in or about the grafts, and clinical examinations indicated no trouble in the neighborhood of the incision. Tenderness, swelling and redness were found on the upper third of the inner side of the leg, and above the upper end of the graft incision on the side of the leg opposite the drain which had been placed to safeguard the bismuth paste injection.

As the graft appeared to be uninjured, it was determined to protect it by continued cast fixation and noninterference. The abscess was drained by two incisions made without the use of an anesthetic, and the cast, which had been carefully removed for examination, was replaced. Observation at daily careful dressings soon showed the disappearance of all suspicious signs indicating further infection, and the wounds were healed after a period of three weeks. Both grafts took perfectly, and steady improvement is reported with ever-increasing weight-bearing. The plan for the second transplant, opposite the first, has been abandoned, as the functional results make it unnecessary.

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EXPERIMENTAL HYDRONEPHROSIS

SIGNIFICANCE OF COMPENSATORY HYPERTROPHY AND DISUSE ATROPHY TO REPAIR *

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Evidence of some experimental work and a greater amount of speculation is found in the medical literature on the degree of recovery that may be expected from repair procedures in cases of hydronephrosis. The generally expressed experimental opinion is frankly pessimistic; and, while experimental results cannot be too closely applied to clinical problems, in this case they seemingly correspond. Technical difficulties and complicating infections are factors often held responsible by surgeons for many of their clinical failures, which have been so frequent that there is a pronounced reluctance to attempt the surgical repair of hydronephrotic sacs. The experience of persistent urinary fistulas and the occasional necessity of later nephrectomy is a real discouragement to one conservatively minded, and forms the chief argument of the radical class for an initial nephrectomy. Ureteropyeloplastics, pyeloplications, lateral ureteral anastomoses, ureteropyeloneostomies, nephrocystoneostomies, pyelorenal orthopedic resections, and other plastic repair procedures have fallen into general disfavor.

Fig. 2.—Roentgenographic appearance of normal kidney of a dog after barium sulphate injection of arterial tree, showing the remarkably rich blood supply to the cortex; for comparison with Figures 3 and 4, in which the kidneys were injected with the same pressure and similar solution.

The problem of repair in hydronephrosis has interested me for many years, and in this time sufficient experimental and clinical data have accumulated to give an entirely new outlook on the subject and to establish that a pathologic and physiologic principle is involved which is fundamental and has been heretofore insufficiently realized. It is my purpose in this paper briefly to present some experimental work indicative of this fundamental principle.[1]

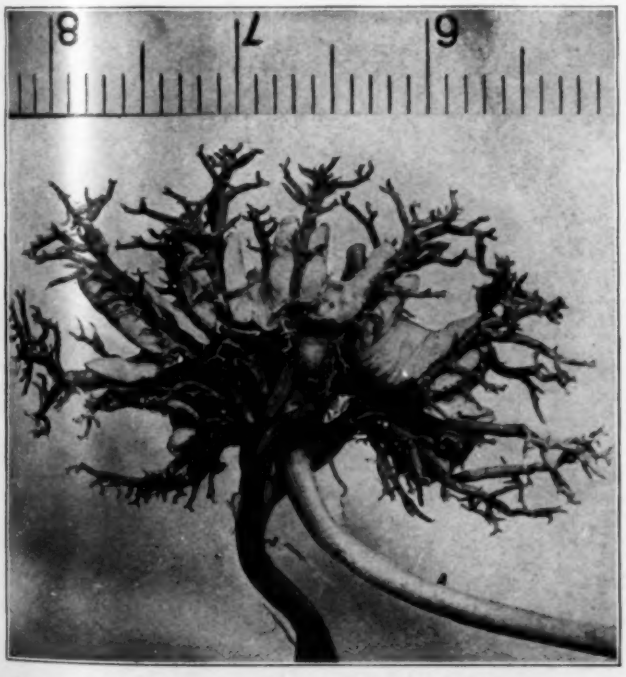

Fig. 1.—Normal kidney of a dog, injected with collodion preparation: How distention of the calices will strangle and pinch the arterial branches coursing between them. Ureter and pelvis, light; arterial tree, dark.

The experimental investigation of the recovery, both functional and anatomic, of a hydronephrotic kidney after the obstruction causing it has been removed has not been extensive. Anatomic recovery obviously is of the first importance, as without it there cannot be any lasting recovery of function, and, in order to have any sort of a control of the findings, complete ureteral obstruction rather than partial obstruction, which is not possible of uniform application and may be therefore quite variable in its effects, is required. There have been, however, several valuable contributions relative to the effects of partial obstruction on function and the behavior to diuretics.[2] Complete obstruction of the ureter gives fairly uniform results in experimental animals, so that one has with it a basis for comparison in a repair series. But too close an analogy to clinical hydronephrosis cannot be taken, as the latter almost invariably follows partial or intermittent types of obstruction. Furthermore, it is questionable whether one can consider the hydronephrotic atrophy of partial and complete block even as relative, for anatomically similar degrees of dilatation will not show analogous histologic changes, though the differences are slight. A kidney with complete obstruction may be more injured both functionally and anatomically than

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1. Complete experimental results, with protocols and bibliography and consideration of related clinical problems, will shortly be presented in the form of a monograph entitled "Renal Counterbalance." An experimental study of this subject was presented at Washington, May 3, 1922, before the Association of Genito-Urinary Surgeons, and is published in the transactions of that meeting.

2. Keith and Snowden, Keith and Pulford, Hermann, Lepine and Porteret, Lindemann, Schwartz, Filchul and Ruschaupt, Brodie and Culles. The reader is referred to the monograph for the bibliography.

one with only a partial hindrance to urinary outflow, even though in gross appearance there is a similar degree of dilatation and atrophy. Nevertheless, there is a sufficient similarity between the experimental and the clinical conditions to render of interest all experimental results.

The few investigations of this particular problem fall into one of two groups. In one group the opposite kidney has not been disturbed in the course of the repair experiment, but has been allowed to hypertrophy and thus compensate for the total loss of function of the side with a completely occluded ureter. This compensatory hypertrophy must later have a considerable influence on the process of repair after the ureteral obstruction is removed. In the other group, the opposite and compensatory kidney has been removed either at the time of the ureteral repair or at some time later, thus throwing at once the complete load of total renal work on the injured repair side. This sudden and often overwhelming burden is a very unphysiologic test of repair possibilities. In the accompanying table are listed, according to this grouping, the actual experiments which we have been able to find reported that have been performed for the purpose of testing repair after hydronephrosis. It will be seen that the results do not offer very much encouragement to the conservative surgeon. Donati rather indefinitely concludes that the usefulness of the conservative treatment of hydronephrosis is not great, and Rautenberg's eighteen experiments apparently show that the repair parenchyma is not viable, but that the injury of even a fourteen days' obstruction is that of a true progressive toxic degeneration with ultimate destruction similar to nephritis. Johnson found that kidneys, the obstruction of which had been removed within two weeks, regained their normal structure except for varying amounts of atrophy in the lateral portions, and that these repair kidneys also regained the ability to compensate for the

DURATION OF PERIOD OF REPAIR

Name of Experimenter	Animal Used	Duration of Complete Ureteral Obstruction	Ureteral Transplantation to	Group 1 Opposite Kidney Undisturbed	Group 2 Nephrectomy	Group 2 Ureteral Ligation	Group 2 Resection	Group 2 Subsequent Period	Result	Comment
Donati	12 rabbits, 2 dogs	10 to 100 days	Bladder	.....	.....	.....	.....	.....	.....	In 11, a fragment from kidney removed for comparison with late result
Amas	Rabbits	14 days	Skin	35 days	.....	.....	.....	.....	Killed	Opposite kidney showed no change
Bortzel	Rabbits	21 days	Bladder	15 hours	.....	.....	.....	.....	Killed	Studied excretion of toluidin blue; repair of ability to excrete it up to 20 to 30 days
		21 days	.....	15 hours	.....	.....	.....	.....	Killed	
		22 days	.....	17 hours	.....	.....	.....	.....	Killed	
		22 days	.....	24 hours	.....	.....	.....	.....	Killed	
		27 days	.....	48 hours	.....	.....	.....	.....	Killed	
		31 days	.....	68 hours	.....	.....	.....	.....	Killed	
		40 days	.....	68 hours	.....	.....	.....	.....	Killed	
Hinman	White rats	14 days	Bladder	146 days	.....	.....	.....	.....	Killed	Studied reaction to intravital stain, diamin blue and anatomic changes of repair
		60 days	Bladder	119 days	.....	.....	.....	.....	Killed	
		60 days	Bladder	165 days	.....	.....	.....	.....	Killed	
		95 days	Bladder	99 days	.....	.....	.....	.....	Killed	
		120 days	Bladder	116 days	.....	.....	.....	.....	Killed	
		120 days	Bladder	92 days	.....	.....	.....	.....	Killed	
Rautenberg	Rabbits	21 days	Bladder	24 days	.....	.....	.....	.....	Killed	
		42 days	Bladder	34 days	.....	.....	.....	.....	Killed	
		42 days	Bladder	70 days	.....	.....	.....	.....	Killed	
		45 days	Bladder	86 days	.....	.....	.....	.....	Killed	
Bradford	Rabbits	11 to 40 days	Bladder	7 to 50 days	.....	.....	.....	.....	Killed	
Ederlein	Dogs	After some time	Bladder	At various periods	.....	.....	.....	.....	Killed	Quoted by Rautenberg
Latcham	Dogs	14 days	Bladder	311 days	.....	.....	.....	.....	Killed	
		14 days	Bladder	326 days	.....	.....	.....	.....	Killed	
Corbett	Rabbits	24 hours	Bladder	.....	8 days	.....	.....	Not stated		
		6 days	Bladder	.....	7 days	.....	.....	Not stated		
		*22 days	Bladder	.....	Same time as ligature removed	.....	.....	37 days	Killed	
		*23 days	Bladder	.....	Same time as ligature removed	.....	.....	55 days	Killed	
Fiori	Rabbit	28 days	Bladder	.....	.....	At same time	.....	26 hours	Died	
	Rabbit	90 days	Bladder	.....	.....	10 days	.....	7 days	Died	
	Dog	160 days	Bladder	.....	At same time	.....	.....	9 days	Died	
Rautenberg	*Rabbits	14 days	Bladder	.....	9 days	.....	.....	49 days	.....	Living
		15 days	Bladder	.....	19 days	.....	.....	9 days	Died	
		16 days	Bladder	.....	15 days	.....	.....	49 days	Died	
		21 days	Bladder	.....	11 days	.....	.....	5 days	Died	
		21 days	Bladder	.....	23 days	.....	.....	26 weeks	Died	
		*21 days	Bladder	.....	22 days	.....	.....	1 year	Died	
		21 days	Bladder	.....	28 days	.....	.....	3 days		
		*22 days	Bladder	.....	31 days	.....	.....	1 year	.....	Living
		28 days	Bladder	.....	24 days	.....	.....	2 days	Died	
		29 days	Bladder	.....	16 days	.....	.....	2 days	Died	
		42 days	Bladder	.....	155 days	.....	.....	4 days	Died	
		42 days	Bladder	.....	.....	74 days	.....	4 days	Died	
		42 days	Bladder	.....	.....	74 days	.....	4 days	Died	
		42 days	Bladder	.....	117 days	.....	.....	4 days	Died	
Donati	Rabbit	10 days	Bladder	.....	.....	15 days	.....	16 days	Died	
	Rabbit	14 days	Bladder	.....	.....	16 days	.....	3 days	Died	
	Rabbit	.....	Bladder	.....	.....	.....	½ kidney	6 days	Died	
	Rabbit	.....	Bladder	.....	.....	.....	½ kidney	4 days	Died	
	Rabbit	24 days	Bladder	.....	35 days	.....	.....	4 days	Died	
	Rabbit	40 days	Bladder	.....	15 days	.....	.....	3 days	Died	
	Dog	70 days	Bladder	.....	136 days	.....	.....	24 hours	Died	
	Dog	80 days	Bladder	.....	160 days	.....	.....	2½ days	Died	
Johnson	Rabbits	3 days	Bladder	.....	5 days	.....	.....	23 days	Died	
		* 7 days	Bladder	.....	16 days	.....	.....	40 days	Killed	
		*14 days	Bladder	.....	35 days	.....	.....	152 days	Killed	
		17 days	Bladder	.....	14 days	.....	.....	9 days	Died	
		19 days	Bladder	.....	3 days	.....	.....	4 days	Died	
		19 days	Bladder	.....	18 days	.....	.....	3 days	Died	
		21 days	Bladder	.....	11 days	.....	.....	6 days	Died	

* Animals successfully surviving opposite nephrectomy.

loss of their opposite healthy partner as measured by phenolsulphonephthalein; but it took forty days for a seven-day and 152 days for a fourteen-day hydronephrosis thus to regain normal function. These kidneys, however, had been subjected to a sudden and almost overwhelming burden at the very onset of their repair periods. In our own experiments on rats, the repair nodules developing after the removal of sixty days' obstruction were insignificant in comparison to the needs of the animal, although anatomic evidence of considerable recovery was present, and the behavior of these repair nodules to intravital stains evidenced a marked functional restoration.

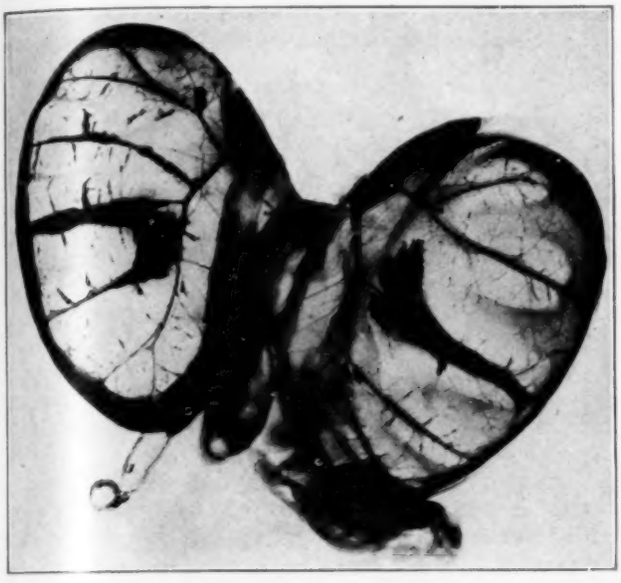

Fig. 3.—Roentgenographic appearance after barium sulphate injection of the arterial tree of a forty-two day hydronephrosis (dog): The kidney has been cut sagittally after injection, but before roentgenography, so as better to show the blood supply of the two portions; the same injection pressure and similar solution as in Figure 2 were used; extravasation into the parenchyma from rupture of middle artery is seen; capillary supply is very limited.

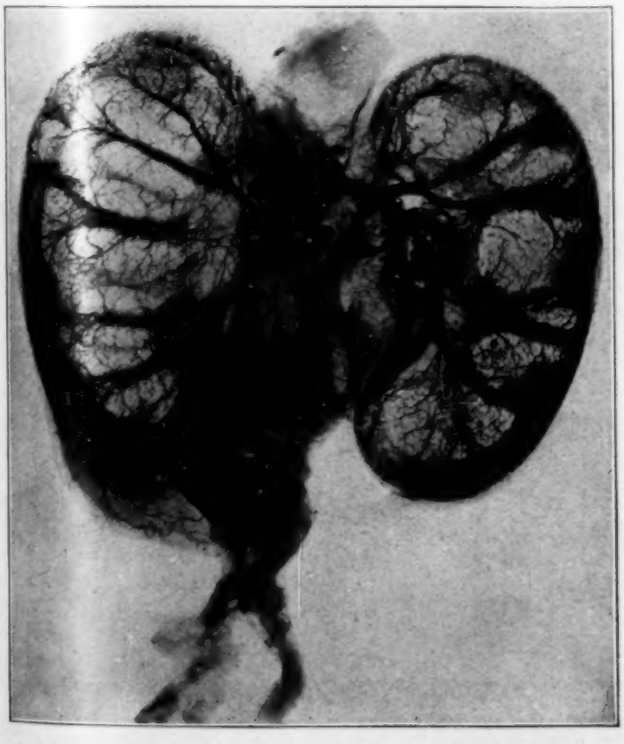

Fig. 4.—Roentgenographic appearance after barium sulphate arterial injection of a forty-two day hydronephrosis three days after ureterocystoneostomy, showing a remarkable revascularization on relief of ureteral and intrapelvic pressure; capillary supply, in comparison to that of kidney in Figure 3, is surprisingly reestablished.

THREE GROUPS OF REPAIR HYDRONEPHROSIS

The great objection to most of this experimental work is that it deals with short-time experiments. The evidences of repair, both functional and anatomic, must have a certain basis of permanence to be of value; and, while Rautenberg's contention of the regressive changes of repair is well taken, we differ with him in the explanation of this progressive degeneration. Our point of view may be best expressed by a consideration of repair hydronephrosis in three groups in place of two.

1. *Ureterocystoneostomy with Nephrectomy.*—If the ureteral obstruction is removed after about fourteen days or less, and opposite nephrectomy is performed, there will be a certain number of animals which will fully recover and the repair kidney not only regain normal function but so hypertrophy as to care for total function. We have successfully performed this experiment in cats. The success or failure is proportional to the absence or degree of infection present in the hydronephrosis at the time of the repair procedure, and Rautenberg and Corbett have reported successes even after twenty-one, twenty-two and twenty-three days' complete ureteral block (as shown in the accompanying table).

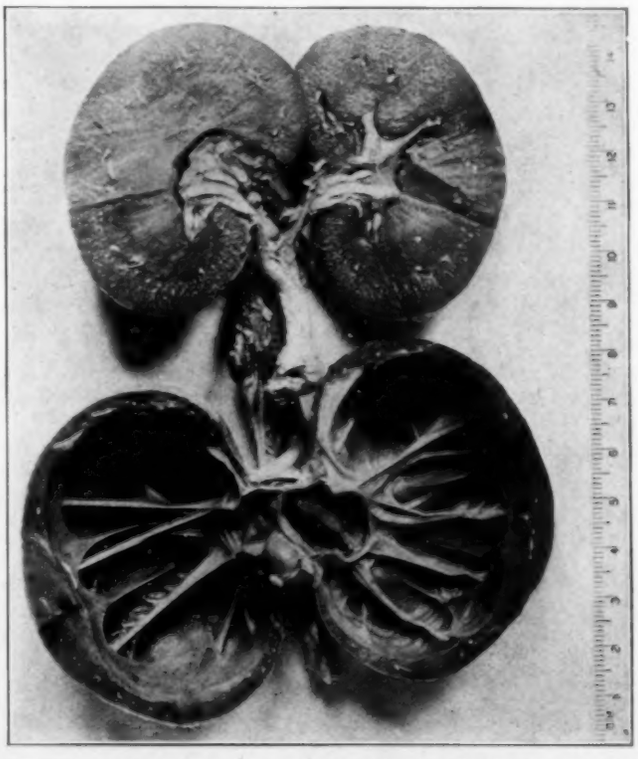

Fig. 5.—Gross specimen of a thirty-day hydronephrosis after complete ureteral obstruction in a dog; the opposite hypertrophic kidney is shown; for comparison with Figures 6 and 7.

2. *Ureterocystoneostomy Without Nephrectomy.*—If, in these short-time hydronephroses, the opposite kidney is not removed or in any way disturbed at the time of the ureterocystoneostomy, and the animal is killed after a relatively long interval of repair, say from one to two years after ureterocystoneostomy, the repair

kidney will be found to have undergone various degrees of atrophy and necrosis, the least when infection is absent and marked when infection is present; but, provided there was a healthy kidney on the opposite side to start with, the repair kidney will never be anatomically or functionally its equal.

In the long-time hydronephroses, from thirty to sixty days, these differences are much exaggerated. None of these animals will survive opposite nephrectomy. Examination of such animals, in which the opposite kidney has not been disturbed, say in from one to two months after ureterocystoneostomy, i. e., early in the repair period, will disclose a complete compensatory hypertrophy of the healthy side and varying degrees of repair of the hydronephrotic side, which may often be considerable. If, however, these animals with a thirty-day hydronephrosis and an undisturbed opposite kidney, as stated above for short-time hydronephroses, are killed from one to two years after ureterocystoneostomy, this kidney, which previously showed considerable repair, will be found invariably to have undergone complete atrophy and degeneration. This atrophy corresponds to Rautenberg's progressive toxic degeneration, which, if a true pathologic condition, should be uninfluenced by alterations or changes in the opposite kidney.

Fig. 6.—Gross specimen of a thirty-day hydronephrosis in a dog 360 days after ureterocystoneostomy: Complete atrophy has occurred; only a few atrophic glomeruli remain; the ureter is freely patent.

3. *Ureterocystoneostomy with Gradual Destruction of the Opposite Kidney.*—In a third group, if the opposite kidney is gradually injured, as by a partial ureteral block, at or shortly after the time of ureterocystoneostomy so as slowly but progressively to shift the burden of renal work from the healthy compensatory side to the injured repair side, a most wonderful readjustment will be found to take place, and in from one to two years, instead of a complete atrophy of a thirty-day hydronephrosis, a complete compensatory repair has occurred, and the opposite kidney, which was the compensatory side in the beginning, has itself undergone complete destruction from hydronephrotic atrophy.

By way of illustration of this very instructive experiment, attention may be drawn to the accompanying illustrations. The importance of blood supply is demonstrated by injected specimens as shown in Figures 1, 2, 3 and 4. Simple thirty-day hydronephrosis in a dog is shown in Figure 5; a repair of such a thirty-day hydronephrosis when the opposite kidney is undisturbed, as it appears three days after, in Figure 4, and as it appears 360 days after ureterocystoneostomy in Figure 6; and a repair of a thirty-day hydronephrosis 390 days after ureterocystoneostomy when the opposite ureter has been partially obstructed at the time of ureterocystoneostomy in Figures 7 and 8. The difference in these kidneys of the same period of complete ureteral obstruction (thirty days) is striking. Figure 5 shows hydronephrotic atrophy (thirty days); Figure 4 shows the early repair (three days), and Figure 6 the late atrophy (360 days) of such a hydronephrosis when the opposite kidney is undisturbed; whereas, in contrast, Figures 7 and 8 show the remarkable counterbalance 390 days later of such a hydronephrosis when given the proper opportunity and stimulus.

COMMENT

The foregoing experimental studies not only confirm the fact that renal reserve and compensatory hypertrophy effect a counterbalance following unilateral nephrectomy, but also demonstrate that in unilateral diseases without nephrectomy an additional factor, which may be termed renal competition, is active in the final anatomic readjustment. There is created by the unilateral lesion an unequal ability to work; one side is healthy and active, the other diseased and less active. Activity is just as essential to renal growth as exercise is to muscle hypertrophy. A gradually increasing demand for more work stimulates renal tissue to greater activity, and results in renal hypertrophy. So, too, inactivity is just as significant to renal atrophy as to muscle atrophy, and a diseased renal mass in competition with a hypertrophic mate gets less and less stimulation as the other side becomes more and more efficient, and this progressive inactivity leads to a disuse

Fig. 7.—Specimen in the experiment illustrating renal counterbalance: The small kidney had a complete obstruction of its ureter for thirty days, and was then the duplicate of the kidney shown in Figure 5; the ureter was then transplanted to the bladder, and the patent ureterovesical orifice is shown with a white straw projecting out of it; five days later a rubber band was placed around the lower end of the opposite ureter belonging to the healthy and compensatory kidney so as partially to obstruct it; the animal was killed 390 days later, having been in perfect health and shown normal renal function by repeated retention and excretion tests.

renal atrophy. Furthermore, just as overexercise of muscle leads to muscle atrophy, so an overwhelming demand for work produces renal inactivity, and renal atrophy would result and be demonstrable if it were

not for the occurrence of early death from renal insufficiency in these experimental cases.

The conception of renal reserve power and compensatory hypertrophy, on the one part, and of renal competition and disuse atrophy, on the other, is important for thorough consideration in contemplation of renal surgery. Their significance in relation to repair operations is obvious. Such procedures throw a hitherto

Fig. 8.—Same kidneys shown in Figure 7 after bisection: Remarkable reparation of cortex and medulla of the thirty-day hydronephrosis is obvious, as is the complete hydronephrotic atrophy of the opposite and earlier compensatory kidney.

inactive injured and inefficient renal mass into direct competition with an active and hypertrophic fellow already accustomed to and thoroughly capable of doing all the renal work. The initial response on the diseased side to the changed condition for better work is one of repair, but this tendency is too feeble to withstand the strain of active competition. Stimulation of its latent reserve power is insufficient to effect a permanent hypertrophy of its remnants. The final atrophy is not wholly a progressive toxic degeneration, as Rautenberg believes, but largely an atrophy of disuse. This difference would seem to be proved by the fact that inhibition of the capable hypertrophic kidney by means of partial obstruction of its ureter, which gradually increases the stimulus given the diseased side, prevents the late atrophy of this diseased kidney, and produces, instead, a remarkable compensatory repair which appears in every way capable, permanent and healthy.

One can conclude that the bad results of repair procedures in hydronephrosis are not always due to technical failures. The fundamental principles of compensatory hypertrophy and disuse atrophy must be taken into account. Attempts to repair a unilateral hydronephrosis in the presence of a complete compensatory hypertrophy on the opposite side are always doomed to failure, and success is uncertain even with a partial compensation of the healthy side in case the diseased side has been much injured or infected, or the repair procedure in any way imperfect. In bilateral disease, conservative surgery is always indicated; but in view of the necessity of repairing the two kidneys in two separate operations, the second operation cannot be safely delayed for too long a period because the initial repair operation may have placed this kidney in such favorable conditions as to allow it to undergo complete compensatory hypertrophy, and an atrophy of the unoperated side from gradually increasing inactivity would then surely result.

516 Sutter Street.

Clinical Notes, Suggestions, and New Instruments

A NEW SPLINT FOR FRACTURED PATELLA

H. C. MASLAND, M.D., PHILADELPHIA

Splints for the fractured patella have been generally unsatisfactory. The adhesive plaster used in making traction on the bones must pull on the skin and the soft tissue before it starts to draw on the bone. There is, in consequence, a redundancy, a wrinkling and compression of the soft tissues in the area between the broken fragments. The correct application of the splint here illustrated will give a direct grip and pull on the bones, while the superficial soft tissues can be drawn from under, both above and below the clutches. This gives a sufficiently taut superficial tissue covering the patella to prevent encroachment between the bones, which can be manipulated to coax out any synovial membrane that might be caught between them.

As a preliminary, the splint should be trued. It can be placed on a table or other flat surface. The upright arms are placed vertical, and opposite their respective mates. The thumb screws should be tightened, clamping the arms rigidly to the side arms in this position. The cross arm should be left free until the splint strips are adjusted to the width of the limb. The middle section of the side strips can be bent above the clutch brackets to fit a large thigh diameter.

The plaster on the leg should extend above and below the maximum diameter of the calf. This prevents lengthwise slipping. In none of my splints do I use padding of any description under the plaster. Mechanically, padding allows

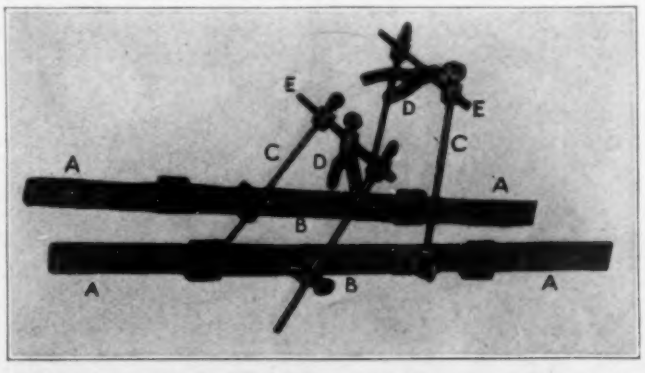

Fig. 1.—*A*, end splint sections; *B*, middle splint sections; *C*, side bracket arms; *D*, patellar clutches; *E*, cross arms.

some slip. It also sweats and macerates the skin, and encourages ulceration.

Each side splint is in three sections. The end sections are buried in the plaster on the leg and the thigh. The parts attached to the middle section should be left exposed. The middle section can thus be removed completely, or disconnected at either end from the end sections. When the side splints are in place, the thumb screws are freed, that the clutch may be moved up and down and lengthwise. The clutch is freed to move on the cross arm, and the jaws of the

clutch are bent to engage, but not to pinch, the edge of the patella.

The jaws are caught with the thumb and index fingers of one hand, and serve as would the thumb and finger of that hand. With the thumb and index finger of the other hand, and the clutch following immediately after, the skin and soft tissue are coaxed away and the bone drawn into position. The lower fragment is adjusted first, as the patellar ligament gives this a stable position. As soon as a clutch holds a bone

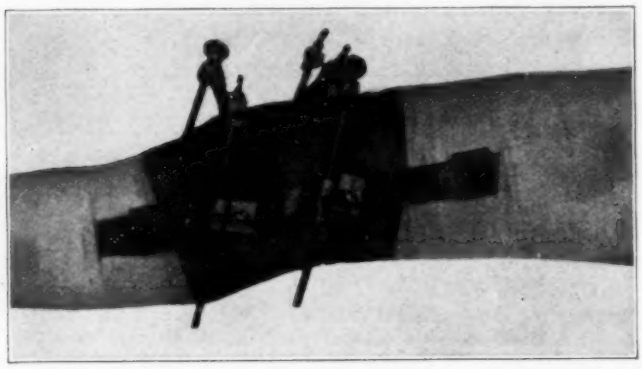

Fig. 2.—Splint in usual position.

properly, all its thumb screws are made tight, so that the clutch cannot move in any direction. The clutch can be used either in a vertical position, catching the bone with its ends, or in a more horizontal position, engaging the bone over a greater area. In cases in which considerable traction is exercised, varying the position will relieve the pressure.

It cannot be emphasized too strongly that the prompt reduction of any fracture is most important. Treated early, most fractures can be reduced as to both anatomic and functional position. In cases of delayed treatment, it may prove beneficial to use continued elastic traction on the upper clutch. This operates to exercise compression and ultimate absorption of the intervening plastic tissue. Elastic traction can be applied by attaching rubber bands or tubing to the cross arms at the side brackets and drawing downward by attaching the other ends of the bands to the side splints. This operates best when the brackets on the splints are placed to give a vertical

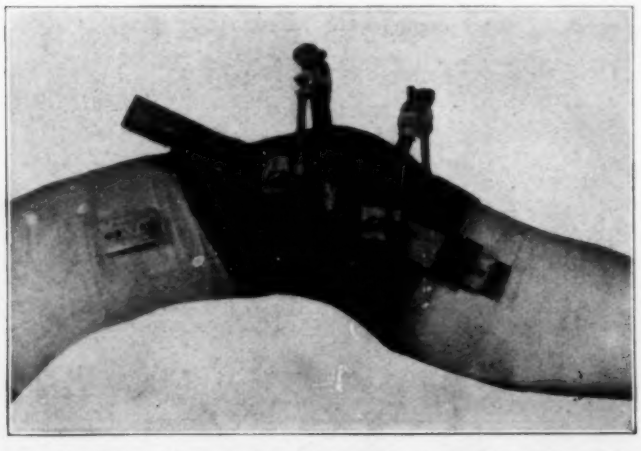

Fig. 3.—Splint disconnected at thigh junction to permit passive motion.

direction to the side arms, and the side splint brackets are left free to permit a forward movement. This absorption of new tissue by compression was beautifully illustrated in a case of downward dislocation of the scaphoid and cuboid, unreduced twenty-three days after injury. I succeeded in causing the absorption of the soft tissue and the reduction of the dislocation.

If a fracture is completely reduced and held in this position one week, the soft tissues will have so bound the parts that subsequent retention is easy. I am convinced that early passive movement of the joints will yield normal function almost if not quite as quickly as bone reconstruction.

Figure 3 illustrates how the joint can be manipulated by simply freeing the sleeves that bind the middle section to the thigh section of the splint. The clutches are not disturbed in their grip on the patella. As the patellar ligament holds the patella in fixed lengthwise relation to the tibia in flexion or extension of the limb, so the splint mechanism, being rigidly attached to the tibia, maintains a similar lengthwise relation. Naturally, the surgeon exercises due skill in this manipulation. He can perform it as early as his judgment indicates.

When an open operation is necessary, this is a good fixation splint. The middle section can be removed during operation. It can then be reapplied, and without disturbing dressings or handling the limb, we have full immobile extension.

This splint can be used for certain fractures of the olecranon process. Here, we would use but one clutch, bending the jaws to engage the fractured process.

2130 North Nineteenth Street.

ELECTROCARDIOGRAPHIC FILM EXAMINING ILLUMINATING BOX

MORRIS H. KAHN, M.A., M.D., NEW YORK

Heretofore, it has been customary for physicians reading electrocardiographic films to hold them up to the artificial light and move them back and forth. This position is not conducive to accurate analysis, and is not practicable for demonstration to a class.

Illuminating box for electrocardiographic films.

The illuminating box that I have perfected for the reading of electrocardiographic films is essentially analogous to that used for the reading of roentgenograms, except that the light here, which is in the upper compartment, is reflected from an inclined mirror placed on the floor of the cabinet. Vent openings are placed to the rear of the upper compartment. With this arrangement, the film may be studied for a considerable time without perceptible heating.

The accompanying illustration shows the translucent glass plate over which the film is inserted. The two drawers are a convenience: one to contain the electric cord and the other for the measuring instruments and magnifying lens.

The apparatus was manufactured at my suggestion and perfected with fine architectural skill and excellent finish by Mr. Samuel Katz of 48 West Forty-Sixth Street.

I have used the apparatus with great satisfaction in demonstrating electrocardiographic films to a large number of physicians and students at one time.

140 West Sixty-Ninth Street.

Artificial Pneumothorax.—Artificial pneumothorax is not a new method of treatment. In 1822 Dr. James Carson of Liverpool suggested its use in the treatment of disease, and the previous year he made a series of experiments showing the effects of artificial pneumothorax on the circulation. It was noticed that patients in whom spontaneous pneumothorax occurred did well, but little is heard of artificial pneumothorax until the end of the last century. Caley treated a case of hemoptysis at the Middlesex Hospital by this means in 1885, and about this time Forlanini began to use the treatment in Italy. It was not, however, until the beginning of this century that it became at all extensively practiced.—Medical Research Council, London, 1922.

A DIFFERENTIAL SIGN IN ABDOMINAL RIGIDITY

C. FREMONT VALE, M.D., DETROIT

Abdominal signs and symptoms in diaphragmatic pleurisy have been emphasized times innumerable. Let us add chest injury to the pleurisy. There are few internists who have not placed the lesion in the peritoneal cavity, and few surgeons who have not operated in such cases for appendicitis or other acute abdominal condition—all of which means that the differential diagnosis is often extremely difficult.

It is hoped that the simple sign here described may be of value to some in such cases when rigidity is present. So far as I have been able to learn, it has not been mentioned in the literature. When the lesion is intrathoracic, the rigidity of the abdominal muscles momentarily relaxes at the end of expiration. This is typical, and is not present regularly at any other period of the respiratory excursion. When the lesion is intraperitoneal, the rigidity is usually constant; but, if intermittent, is not regularly so, as in the chest condition. When the signs are marked, there is also a pause often prolonged, between the end of inspiration and the beginning of expiration, with a rapid excursion.

This was first observed and is best demonstrated in traumatic chest conditions. Here it is often greatly exaggerated, and cannot be mistaken. The abdominal rigidity is so marked as almost or quite to equal the characteristic boardlike rigidity of perforated ulcer, and at first one feels sure that serious intra-abdominal injury has occurred. I operated in one such case, and my surprise at finding no injury led to the more careful study of this type of rigidity.

This sign has been observed in a great many traumatic cases, and fewer chest infections. So far we have not seen it fail. It is now used as a routine in the emergency department of Receiving Hospital as the main differential diagnostic sign.

613 David Whitney Building.

A SAFE METHOD OF ANESTHETIZING CHILDREN WITH ETHYL CHLORID

JOSEPH E. LUMBARD, M.D., NEW YORK

Ethyl chlorid is a serviceable anesthetic, though it has limitations. Its proper field is in the induction stage, as a preliminary to ether anesthesia for children. For adults, I have found that nitrous oxid is better; but it may also be used as an adjunct to ether for adults. Its greatest field is with children under 10 years of age. Most of the textbooks on general anesthesia rely on the loss of consciousness as the indication to stop its administration. This is too indefinite and dangerous.

PROCEDURE

To administer ethyl chlorid, a Yankauer mask is covered with eight or ten layers of gauze for children under 8 years of age, and from ten to fifteen layers for older children. The mask is placed over the mouth and nose, and the child is asked to count slowly. The ethyl chlorid is slowly dropped, never sprayed, over different parts of the mask, until the count becomes confused. Then the anesthetist immediately changes to ether as in the usual "drop ether" method. When children are too young to count, the cry is used as a guide, and the anesthetic switched at once to ether when the cry begins to diminish. Occasionally one will encounter children who neither count nor cry. This may be overcome by tickling the feet, pinching the skin of the neck, or pushing the jaw forward. At all times if there is any doubt as to the depth of anesthesia, one should switch to ether, and if it is not tolerated, simply add a few more drops of ethyl chlorid. My old anesthesia slogan applies here: "It is easier to add than subtract, when administering anesthetics."

One should be sure to use ethyl chlorid from a glass container having a good dropper attachment.

By this method we have a safe, simple, quick and easy way of using ethyl chlorid for children.

1925 Seventh Avenue.

Special Article

THE CARE AND FEEDING OF INFANTS

(Continued from page 253)

[NOTE.—This is the fifth of a series of articles on the care and feeding of infants. It is addressed to the general practitioner rather than to the pediatric specialist. When completed, the series, somewhat elaborated, will be reprinted in book form.—ED.]

CARE AND FEEDING OF PREMATURE INFANTS

Preparation for the care and protection of premature infants, in order to insure them the best opportunity for survival, must be started with the first intimation that labor is to begin, if spontaneous; and, when labor is to be induced, the infant, as well as the mother, should receive the best thought of the physician. The infant must be protected from the dangers of refrigeration, skilled nursing care must be supplied, and it must receive a suitable diet.

PRESERVATION OF BODY TEMPERATURE

Even though the mother may be so situated as to receive proper attention in the home, if facilities for caring for the infant are not at hand, the confinement should be conducted in a properly equipped hospital.

Syphilis should be suspected as a possible cause in all cases of premature birth.

The labor should be conducted with the strictest attention to asepsis, because of the high mortality following infections in this class of infants. Every effort should be made to prevent chilling of the infant immediately after birth. Owing to the instability of the heat-regulating centers, the infant's body temperature is rapidly affected by its surroundings. It should be received in a heated blanket and placed in an improvised heated basket or incubator bed, as soon as possible after the cord has been severed. The face alone should be left exposed. Protection is best afforded by a cotton pack, or, better still, by woolen garments. A nurse or another person experienced in the handling of infants should be assigned to the care of the baby and give it her entire attention so that spells of asphyxia and cyanosis may receive the immediate attention of the physician. As a rule, the initial bath should be omitted until the infant, if it is a small one, has adapted itself to its new environment. Every effort should be directed to the prevention of overheating and burning infants, as they do not resist high temperatures to much better advantage than they do refrigeration, and they are easily burned; and burning, even though slight, would be associated with a high mortality. The room in which the infant is placed should be light and easily ventilated, without being cooled to a greater degree than may be desired. If the room temperature can be kept between 72 and 75 F., a well protected basket or crib can be temporarily heated to meet the infant's needs by surrounding it with hot water bottles placed a sufficient distance from and properly protected so that contact with the infant will be avoided. An electric pad protected by an insulated copper jacket will answer the purpose when placed under the pillow on which the infant rests. Suitably equipped obstetric departments are usually furnished with a heated bed as part of their permanent equipment. It is rarely necessary to surround the infant with a temperature greater than

from 85 to 88 F., and usually it can be reduced to 80 F. in a few days except in the case of the smallest infants. A thermometer should be placed alongside the baby under the robes used as a covering.

Aseptic nursing is imperative to the welfare of these small infants. This applies to linens, clothing, thermometers and also utensils used in the care of the baby. During the bath, whether by sponging or by tubbing, it must be protected from chilling and infection, and of equal importance is the prevention of scalding. The water should be tested by allowing the hand to remain in the water for at least thirty seconds before placing the baby in the bath tub, if it is to be tubbed. The baby should be bathed in a warm room. After the first dressing, all garments which come in contact with the body, except the napkin, should be made of a medium weight flannel, as the infant is best protected by woolen garments. As an outer garment it may be wrapped in a woolen blanket or one made from non-absorbent cotton between cheesecloth which has been quilted to protect it. A more permanent gown may be made of blanket material or eider-down in the form of a rectangle of sufficient size to surround the body and permit pinning over the feet. To this may be attached a smaller square at the top which will fold over the head and allow the face to remain exposed. A more permanent sleeping bag may be made of similar material. These have a disadvantage of requiring considerable handling of the infant for changing napkins and inspecting the genitalia. The most practical garments for the infant consist of a light-weight wool flannel undershirt with blind sleeves, so that the hands remain covered. Above this an overshirt of a heavier flannel or French piqué is to be worn. The extremities are wrapped in a flannel pinning skirt or blanket, fastened to the overshirt by small safety pins. The advantage of this type of clothing is that soiled napkins can be removed without exposing the upper part of the body, and the handling of the infant is at a minimum. A small pad of cotton should be placed inside the napkin so that the outer clothing may be better protected. The diaper should be changed as soon after soiling as possible, and this in itself will require regular inspection. It should therefore be dressed accordingly. The importance of properly clothing these infants becomes evident when consideration is given to the fact that they stand handling very poorly. As the infant becomes older, its clothing should be similar to those used in full term infants so that it may have freedom for its extremities. The position of the infant should be changed at stated intervals in order to prevent hypostasis.

WORK OF THE NURSE

The nurse should appreciate the requirements of her charge. She must be willing to make necessary sacrifices while the infant is passing through its first critical days, and must be properly instructed to meet the emergencies of asphyxia and to counteract the spells of cyanosis. These will require almost constant diligence. She must also be possessed of good judgment in the matter of feeding, in order to avoid both underfeeding and overfeeding. She must also be able to appreciate the indications for and the methods of administering catheter feeding, as well as the simpler methods by use of the medicine dropper or miniature feeding flasks. She should be instructed in the proper preparation and tubbing of the infant for its bath, the giving of low colonic flushings, and the application of artificial respiration.

FEEDING

The majority of prematurely born infants will not survive artificial feeding; therefore, the difficulty in the interpretation of the needs of the individual infant should lead to the conclusion that a supply of breast milk is imperative to fulfil the food requirements of these infants in order to insure a low mortality. The administration of the feedings offers no difficulties which cannot be overcome if the infant is viable, persistent vomiting is absent, and breast milk is at hand. No definite rules can be outlined as to the quantity to be given at each feeding, and the same statement applies to the interval between feedings. This statement implies that each infant must be fed to meet its *individual* needs.

For the purpose of feeding, premature infants must be divided into two large classes: (1) those able to nurse directly from the breast, and (2) those which will require hand feeding. If the infant is sufficiently developed to nurse from a well formed nipple, it should be placed at the mother's breast two or three times during the second twelve hours after birth and, following this, at three-hour intervals. The nursing period should, however, be short at first, beginning with two or three minutes at the breast, as this will soon educate the child to expect its food at regular periods. It will also help to stimulate the mother's breasts, as well as to develop the infant's sucking muscles.

During the first days, until there is sufficient flow of milk, the infant must receive its breast milk from another source. The necessity of an early supply of food cannot be overemphasized, as even the better developed infants do not withstand prolonged starvation. When a wetnurse is available and her infant is at hand, her baby can be used to stimulate the breasts of the mother, and the premature infant can be placed on one of the breasts of the wetnurse. In the case of very weak infants, the breast designated for its use can be made to secrete more freely by placing the wetnurse's baby on the opposite breast during the feeding period. As a weak infant may receive only a very limited amount of milk, even after a prolonged period at the breast, a proper scale is a necessary part of the equipment, so that it may be weighed before and after feeding. There is far less danger from overfeeding because a too rapid flow or an excessive amount usually results in regurgitation, and this can easily be remedied by shortening the period at the breast. The capacity of the stomach in some of the smaller infants, even though they are able to nurse at the breast, is such that shorter intervals may be necessary. They may be nursed at two or two and one-half hour periods.

FEEDING DURING THE FIRST DAY

During the first day, milk may be withheld for twelve hours until the respiratory and circulatory functions are well established. During the second twelve hours, from one to three feedings of breast milk may be started if the infant's condition warrants.

FEEDING FROM THE SECOND TO THE TENTH DAY

For practical feeding purposes, the second to the tenth days may be grouped as the second feeding period.

From the second day the infant should be fed regularly, day and night, the number and time of feedings depending to a great extent on (1) whether the food is given with or without the use of a catheter; (2) the gastric capacity, and (3) the infant's general condition.

Further fluids, preferably inert, such as water or 1 per cent. lactose solution, are administered to compensate for the loss of body fluids through the kidneys, bowels, lungs and skin. The infant requires about one sixth of its body weight of water, inclusive of that contained in the milk, in twenty-four hours while in the heated bed. Such quantities, however, should not be attempted on the first days; usually it will be possible to approximate one eighth of the body weight by the fourth day. The early feedings must necessarily be small, and the increases gradual.

Each infant must be fed individually, as it is impossible to formulate definite rules for feeding, at least during the first ten days. The physician must have a definite idea of (1) the minimal food requirements for life; (2) the amount of food necessary to maintain at least a stationary weight, and (3) the amount of food needed to meet the requirements for growth and development.

Approximately one seventh of the body weight of fluids and human milk of a food value of 70 calories per kilogram every twenty-four hours are required to maintain life. Little can be expected in the way of weight increase until 90 calories is reached; and, depending on the weight, body surface, and physiologic development, the later needs of infants will approximate from 100 to 140 calories per kilogram of body weight.

Infants, to fulfil all their needs, will therefore require from 140 to 200 c.c. of breast milk per kilogram, or from one seventh to one fifth of their body weight daily. They can, however, maintain life on 100 c.c., and hold their weight in most cases on 130 c.c. per kilogram.

Beginning (in most cases by the second day) with from 20 to 40 c.c. of human milk per kilogram of body weight, the quantity may be increased by from 8 to 15 c.c. daily per kilogram until, usually by the tenth day, feedings averaging from 80 to 140 c.c. per kilogram can be fed.

These feedings should, as rapidly as possible, be supplemented by water or sugar-water by mouth, or saline by rectum to meet the required 140 to 200 c.c. per kilogram of fluids required daily.

After the *tenth day,* in larger infants the milk can be increased more rapidly, usually by 15 and occasionally 20 c.c. per day, until from 140 to 200 c.c. per kilogram are fed, the methods of giving the food, as well as its frequency, being dependent on the general development of the infant.[12]

The *size of individual feedings* will vary with the method of feedings. When the infant is *catheter* fed, from six to eight feedings a day are given, with an average of from 4 to 6 c.c. for each feeding during the second day. The feedings are now increased daily by an average of 2 c.c. at each feeding. When feeding from the *bottle* or by *dropper* is employed, smaller feedings are usually given more frequently, usually from eight to ten daily, although twelve may be needed when larger feedings are not retained. Beginning with from 2 to 4 c.c., one may increase by 1 or 2 c.c. each feeding on each succeeding day, until from 140 to 200 c.c. per kilogram daily is reached.

The food and water to be administered should be noted in writing for the nurse's instruction each day, after a thorough inspection of the infant and its clinical chart.

12. One kilogram equals 2⅕ pounds; 30 c.c. equals 1 ounce; 4 c.c. equals 1 dram; 1 ounce of breast milk contains 21 calories; 100 c.c. of breast milk contains 70 calories.

The diet of a premature infant making a satisfactory gain in weight should not be changed arbitrarily without a well-defined indication.

Initial Weight Loss.—The lower the birth weight, the greater is the percentage of weight loss to be expected. Artificially fed infants lose more weight than breast-fed infants in whom the diet is started early. An average loss of not more than 8 to 12 per cent. of the birth weight may be considered satisfactory. By regular administration of inert fluids during the first days, the total loss can frequently be reduced to 5 per cent.

Daily Gains.—These are not necessarily in proportion to the changing quantity of milk administered, as many factors—the condition of the bowels, the quantity of urine passed, the temperature of the infant's surroundings, and numerous others — will necessarily influence the weight.

An average daily gain greater than 20 gm. is unusual when the infant's food is limited to one fifth of its body weight. Although occasionally an infant holds its birth weight, most infants do not regain their birth weight before the end of the second or third week.

In the very small premature infants, an average daily gain of from 10 to 15 gm. with a doubling in birth weight in from seventy-five to 100 days may be considered satisfactory. In the larger infants, a gain of from 15 to 20 gm. may be expected with a doubling in birth weight in from fifty to 100 days. The birth weight is frequently trebled within 180 days.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

BACILLUS ACIDOPHILUS MILK-LEDERLE.—Whole milk cultured with *Bacillus acidophilus.* It contains not less than fifty million of viable organisms (*B. acidophilus)* per cubic centimeter.

Actions and Uses.—See Lactic Acid-Producing Organisms and Preparations (New and Nonofficial Remedies, 1922, p. 156). During recent years reports have been published which indicate that the growth in the intestinal canal of the normally present *Bacillus acidophilus* may be increased so as to make it the predominating organism by the administration of milk inoculated with *B. acidophilus,* by the administration of viable cultures of the *Bacillus acidophilus* in conjuction with lactose, or by the administration of lactose alone. The therapeutic value of the administration of cultures of *B. acidophilus* is still in the experimental stage.

Dosage.—For adults, 1,000 Cc. of bacillus acidophilus milk-Lederle per day, increased or decreased to meet requirements. When employed in infant feeding, it may be diluted with boiled water. Bacillus acidophilus milk-Lederle must be kept on ice and should be used within one week of the expiration date which appears on each package.

Lederle Antitoxin Laboratories, New York. No U. S. patent or trademark.

Whole milk is sterilized at 100 C. for 2 hours, cooled to 37 C. and inoculated with a twenty-four hour culture of *B. acidophilus.* After inoculation, the milk is kept at 37 C. for from 20 to 24 hours until an acidity is reached so that 10 Cc. will require for neutralization 11 Cc. of tenth-normal sodium hydroxide solution, using phenolphthalein solution as indicator. The product is then cooled to 5 C., agitated until homogeneous and transferred to 200 Cc. bottles, which are closed with seals. The strain of *B. acidophilus* used is one isolated by Rettger. To insure its adaptability to intestinal implantation, the bacillus is freshly isolated from intestinal contents as frequently as is necessary.

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SATURDAY, FEBRUARY 3, 1923

ANIMAL AND VEGETABLE PATHOLOGY IN RELATION TO HUMAN DISEASES

At the recent meeting of the British Medical Association, a special session was devoted to the relation of animal and vegetable pathology to human diseases.[1] Vegetable diseases, so far as we know, have no significance as sources of human disease, if intoxication with the products of fungus infection, as in ergotism, is excepted. These diseases do, however, offer many problems that are of importance as sources of information concerning human pathology. Thus, several plant diseases are produced by filtrable viruses. Much of our knowledge concerning these important pathogenic agents we owe to the discovery, made as long ago as 1892, that the mosaic disease of tobacco is produced by an invisible agent that passes through filters that are impervious to ordinary bacteria. Several infectious diseases of plants share with animal diseases the peculiarity of insect transmission, and in at least one of them, it seems, part of the life cycle of the ultramicroscopic organism is consummated within the insect host. Thus, the "curly top" disease of beets cannot be conveyed by the insect until several hours after the virus has been taken up, presumably because this period is required to accomplish a certain part of its life cycle. Although the filtrable viruses, in plants as in animals, are usually not microscopically visible, in some mosaic diseases bodies have been found that resemble such structures as Negri bodies, *Cytorrhyctes variolae* and *Rickettsia*. Even if plant infections are not transmissible to man, the plant pathologists can lay claim to having been first to show that a disease may be produced by a filtrable invisible virus, and that diseases may be transmitted by insects. They were first to show that either resistance or susceptibility to infection may be hereditary, and that this property may be transmissible in strict accordance with the mendelian principles, as Maud Slye claims for mouse cancer. However, despite many examples of natural immunity in plants, no examples are known in plant pathology of the conferring of artificial immunity by inoculation of a susceptible plant with a weak strain of an otherwise virulent parasite. Parasitic attack in plants is usually localized, and there is no mechanism for the circulation to other parts of the host plant of any antibodies that may be produced in consequence of this attack. Plants attacked by parasitic diseases not infrequently recover, but this is no guarantee against attack again in the immediate future.

In this country the important work of Erwin Smith on the crown gall disease of plants is well known. Notwithstanding the numerous points of resemblance which the lesions of crown gall bear to animal tumors, the British plant pathologists who participated in this discussion seem unwilling to accept the conclusion that it is established as a true neoplasm; hence observations on its etiology cannot be accepted as evidence as to the etiology of human neoplasms. Brierly says:

> The unbridgeable gulf between the morphology, anatomy, and physiological processes of animals and plants resulting from the complete divergence in their evolutionary sequences must be recognized. There is in animals nothing comparable with the rigid-walled cells of plants, and in plants nothing comparable with the blood vascular system, the lymphatic, alimentary, nervous, muscular, and skeletal systems. It is these characteristic features that give rise to and make possible the specific pathological responses associated with disease. Occasionally interesting but purely superficial general parallels exist; but to find exact analogies in development and structure, and even more to trace exact correspondences in the details of the morbid histology of diseased host tissues of animals and plants, and to reason from one to the other is to falsify and confuse every issue. These differences are fundamental, and comparative investigations can only have value if they are borne acutely in mind. The conclusion to which I am drawn from a comparative review of diseased states in animals and plants is that as regards the host tissue responses there is little if anything in common save the most general reaction of wound healing.

With animal diseases the matter is altogether different. Hobday recalls that even in Great Britain there are at least these infectious diseases of animals which are indisputably communicable to man: glanders, rabies, anthrax, tuberculosis, foot-and-mouth disease, cowpox, mange of all animals (horses, cattle, dogs and cats), ringworm (especially of the horse, calf, cat and mouse), and certain forms of seborrhea (such as blacksmiths contract from handling horses with greasy legs). To this group must be added, as diseases or infections common to the two, which animals may transmit to man, diphtheria, infections with *Bacillus enteritidis* and *Bacillus paratyphosus* B, tetanus, and gas bacillus infection, to say nothing of the numerous animal parasites, such as trichinae, echinococcus and the tapeworms. In this country we must also consider plague, Rocky Mountain spotted fever, Malta fever and infectious with *Bacterium tularense*. *Bacillus abortus* of Bang is also under suspicion as a source of contagion from cattle, and apparently is related to the organism that causes Malta fever, if not identical with it.

Glanders and rabies, two of the most horrible diseases that can affect man or beast, show what can be done by organized collaboration of the medical and the

1. Brit. M. J. 2:955 (Nov. 18) 1922.

veterinary professions. Each is primarily a disease of animals, and comes to man only from them. Let the veterinary scientist eradicate glanders from his patients of the horse tribe, and rabies from the canine race, and neither of these diseases will appear in man. As evidence of this, the story of rabies in Great Britain is most instructive. Aided by their island location and adequate laws, the energetic watchfulness of the veterinary officials of the ministry of agriculture kept Great Britain free from rabies for nearly twenty years; and until some thoughtless person committed the stupid and criminal offense of surreptitiously smuggling a dog (which happened to be infected and in the incubative stage) into the country, the much dreaded disease existed in that country only in name. The first case was reported in the district of Plymouth about May, 1918, and in 1919 alone 179 persons were bitten by animals in the scheduled areas, forty-six of them by animals proved to be rabid. It is a triumphant tribute to the memory of Pasteur that there have been no deaths in England from hydrophobia since his day.

The record of glanders is not much less brilliant. Twenty years ago, 2,370 horses were destroyed in Great Britain for glanders in one year, whereas in the first half of 1922 no case was reported. Not a single case of human infection from glanders was reported in the British army during the war, despite the great amount of contact between men and horses. The mallein test is entitled to a large part of the credit for virtually eliminating glanders as a human disease. The foregoing examples emphasize the importance of the development of the field of comparative pathology or, better, of comparative medicine, in order that all progress made in one branch of pathology may find its application in the other branches without fail and without undue delay.

GOATS AND MALTA FEVER IN THE UNITED STATES

According to a recent report,[1] goat's milk is being sold in a number of cities in the United States, usually as a fancy article and at a high price. It is consumed largely by infants and invalids, particularly by patients with tuberculosis. This may come as a surprise to readers who have never considered the fact that in some parts of the world the milch goat is a competitor of the dairy cow. The small quantity of milk that is used, chiefly by children, in the dry summer countries of Europe is largely supplied by goats, which can live on a poorer and drier diet than is possible for the cow. It was recently reported[2] that in the whole of Greece there are only 4,000 cows, most of them near Athens, goats being more important as a source of milk. Some varieties of milch goats in Mediterranean countries are said to give a greater amount of milk in proportion to their weight and food consumed than does any other milk producer. From the standpoint of chemical composition and nutritive value, in which it closely resembles the mammary secretion of the cow, goat's milk has much to recommend it. For some time, however, it has been known that this fluid may carry the infectious agent of Mediterranean, undulant, or Malta fever. How this disease, due to *Micrococcus melitensis* of Bruce, disappeared from Gibraltar, pari passu with the disappearance of Maltese goats, has become an instructive chapter in the history of preventive medicine.[3] That Malta fever is spread chiefly through the use of goat's milk was clearly established in the reports of the British commission for the investigation of the disease. Before the conclusions of this commission were announced in 1905-1907, this common mode of infection was not appreciated. Our present knowledge makes the prevention of the disease a comparatively simple problem. The infection should be eliminated from goats; but until this is done, all milk from this species should at least be pasteurized before being applied to human dietary uses.

That the United States is not free from the menace of Malta fever was made clear by the investigations of Gentry and Ferenbaugh[4] of the U. S. Army, who reported in 1911 that the disease had in all probability been present for a quarter of a century in the older goat raising sections of Texas. This endemic center embraced an area approximately 300 miles along the Rio Grande, extending 90 miles to the north. Serologic tests on more than 100 goats gave positive reactions for the organism of Malta fever in about one fifth of these animals. The human patients gave a history of drinking unboiled milk, or were associated with the goat-raising industry. Even today the menace continues. Surgeon Lake[1] of the U. S. Public Health Service has reported fully a recent outbreak, of which mention was made several weeks ago in THE JOURNAL. More than thirty authentic cases were discovered at Phoenix, Ariz., and Lake concludes that conditions favorable for the existence and spread of Malta fever are present in all the southwestern states. He asserts that goat's milk is being sold in a number of cities in the United States. As Malta fever, according to the government experts, has in all probability existed in Texas for at least thirty-six years and in Arizona for at least fourteen years, and absolutely authentic cases have been known in Texas since 1911 and in Arizona since 1912, effective measures for prevention are clearly called for. Lake suggests that the prohibition of the sale of goat's milk in cities where an ample supply of cow's milk is available should be seriously considered by health officers. Where it is necessary to allow the sale of goat's milk to secure sufficient fresh milk, efficient pasteurization under constant supervision by

1. Lake, G. C.: Malta Fever in Southwestern United States, Pub. Health Rep. **37**: 2895 (Nov. 24) 1922.
2. Smith, J. R.: The World's Food Resources, New York, Henry Holt & Co., 1919, p. 249.
3. Bruce, D.: Osler's Modern Medicine **3**: 17, 1907.
4. Gentry, E. R., and Ferenbaugh, T. L.: Endemic Malta Fever in Texas, J. A. M. A. **57**: 889, 1045, 1127 (Sept. 9, 23, 30) 1911.

the health authorities should be required. If such a provision seems unduly drastic, it should be recalled that from the clinical symptoms alone the disease may remain unrecognized for a long time or may be confused with other infections. It is particularly insidious in infants. Consequently, prophylactic or preventive measures need to be doubly exacting; and the goat certainly is not indispensable as a source of milk in this country.

THE BILE AND PANCREATITIS

Although the phenomena of the occurrence of pancreatitis have been extensively observed and made the subject of exhaustive reports, the actual cause of the disease still remains one of the unsolved problems of pathology. Various sorts of experimental interference with the normal functions of the pancreas may lead to pathologic conditions and symptoms characteristic of pancreatitis; in fact, the agencies that lead to these manifestations may be so varied and seemingly unrelated in character that this fact of itself has served to confuse the student of the subject. At one time it seemed as if the entrance of infectious micro-organisms through the duct of Wirsung must be the predisposing cause of pancreatitis, whether acute or chronic. Some writers are strongly of the opinion that the possible infecting organisms are brought to the pancreatic tissue by way of the lymphatics. Such views were formulated at a time when bacteriology was the favorite domain from which to recruit the causes for obscure diseases. There seems to be little doubt, however, that cases of hemorrhagic pancreatitis occur in which infection has not been demonstrable despite careful search.

Other theorists have charged to trauma the stasis of the pancreatic juice, the acute inflammation of the gland and the consequent escape of enzymes held responsible for the fat necrosis. Experimentally, this outcome has followed injections of quite unlike substances into the ducts of the pancreas. By others, who perhaps constitute the majority of the writers on this subject, particular emphasis has been placed on the etiologic importance of gallstone and gallduct disease. They postulate a reflux of bile into the pancreatic duct, with the consequent sequence of familiar untoward symptoms. An elaborate investigation of such a possibility has been completed recently at the Mayo Foundation laboratories by Mann and Giordano.[1] They studied the relationship of the common bile duct to the pancreatic duct and their mode of entrance into the duodenum in man in order to determine the percentage of instances in which there would be an anatomic basis for the foregoing hypothesis. The data conclusively prove that the number of instances in which the anatomic arrangement in the relationship of the two ducts would permit bile to pass into the pancreatic duct is very small. The other possibility that the sphincter at the duodenal end of the common bile duct could contract and convert the two ducts into a continuous channel has been investigated. Here, too, it is shown that in most instances in man the sphincter is located at a point at which contraction will close both ducts and will not convert them into a continuous channel. In a very small percentage of instances a small bundle of muscle fibers is found in a position where possibly it could convert the two ducts into a continuous channel.

Even when sterile bile is introduced into the pancreatic duct at a pressure comparable with the maximum that might be expected in the common bile duct, the resulting damage was in no case identical with typical hemorrhagic pancreatitis. Indeed, on careful investigation the indications are that reflux of bile into the pancreatic duct is at most rarely the cause of the disease. This negative outcome of the search should not disappoint or discourage the investigator. It is a step in advance when one knows what not to expect. He can then look farther.

1. Mann, F. C., and Giordano, A. S.: The Bile Factor in Pancreatitis, Arch. Surg. **6**: 1 (Jan.) 1923.

NEW FACTS ABOUT SALICYLATES

The widespread use of salts and other derivatives of salicylic acid in medical practice, as well as by the undirected layman, justifies the conviction that these drugs have therapeutic potencies of real worth. Their vogue is not merely a passing fad stimulated by popular advertisements or some other temporary device of exploitation. The compounds of salicylic acid continue to retain recognition, not because their pharmacology has been clearly formulated, but rather because somehow they seem to "produce results." For this reason it is interesting and all the more provocative of further study to learn how the traditional or assumed explanations of therapeutic reaction are being shattered by the results of current investigations. Thus the claims made for a superiority of the "natural" salicylates derived from oil of wintergreen or oil of sweet birch versus the "synthetic" manufactured in the chemical laboratory have been negatived in the extended investigation of the subject undertaken under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association.[1] Hewlett,[1] who summarized results of a clinical investigation (carried out by physicians with hospital facilities who had been supplied with "natural" sodium salicylate and "synthetic" sodium salicylate in such a way that they did not know which of their samples were "natural" and which were "synthetic") reported that there is no difference between the natural and the synthetic product so far as observable results are concerned. The natural salicylic acid has been many times as expensive as the synthetic.

1. Waddell, J. A.: A Comparative Investigation of the Effects and Toxicity of Sodium Salicylate of Natural and Synthetic Origin, Arch. Int. Med. **8**: 784 (Dec.) 1911. Eggleston, Cary: The Relative Value of the "Natural" and the Synthetic Salicylates, J. A. M. A. **59**: 2057 (Dec. 7) 1912. Hilpert, W. S.: The Purity of Commercial Sodium Salicylate, ibid. **60**: 1137 (April 12) 1913. Hewlett, A. W.: Clinical Effects of "Natural" and "Synthetic" Sodium Salicylate, ibid. **61**: 319 (Aug. 2) 1913. Report of the Council on Pharmacy and Chemistry: Natural and Synthetic Salicylates, ibid. **61**: 979 (Sept. 20) 1913.

Salicylic acid is known to be inhibitory to bacterial development. Consequently, it seemed likely at first glance that the salicylates exert some antiseptic effect on micro-organisms that have invaded the tissues, as is the case in some of the rheumatic fevers. The bactericidal action of salicylic acid is far more pronounced than that of salicylates, in vitro. The newer studies, already reported [2] in THE JOURNAL, indicate clearly, however, that the reaction of the body fluids, even in localities where foci of bacterial invasion may affect the immediate environment of the bacilli, is never adequate to insure a hydrogen ion concentration requisite for the development of bactericidal power from salicylates. In other words, it is impossible for the free acid to occur in the tissues or body fluids in sufficient concentration to exert any marked bactericidal action.

Again, it has been conceived that the salicylates may increase the resisting power of the body by stimulating the formation of immune substances. In this way the drug might have a most potent influence in lowering the vigor of the etiologic microbial agents in cases like rheumatic fever. Swift [3] has been unable to substantiate such an hypothesis. When animals injected with *Streptococcus viridans* were treated with sodium salicylate, they showed diminished complement-fixing antibodies, agglutinins and hemolysins, compared with the untreated controls. Swift therefore frankly asserts that the beneficial effects of sodium salicylate in rheumatic fever patients probably cannot be attributed to an increased production of circulating immune substances against the infectious agent. It is a significant fact that few if any drugs or chemicals are known definitely to enhance the formation of immune substances in the organism, although the records of attempts in this direction are so few as to make any generalizations at present unjustified, if not hazardous. Many substances are, of course, well known to depress immune substance formation.

The antiphlogistic effect of salicylates in the polyarthritis of rheumatic fever remains undenied; and their antipyretic action, due to an increased loss of body heat in febrile patients, is clearly demonstrated through Barbour's [4] researches. Swift reminds us that from clinical observations alone it would seem that salicylates either lower the infectivity of the etiologic agent of rheumatic fever by a direct action on the virus, or increase the ability of the body to react against infection. For the latter alternative the evidence is now unfavorable. The drug may, of course, have a bacteriostatic power. Swift properly points out—and this should be clearly emphasized—that the facts at hand offer no contraindication to the administration of salicylates to patients suffering from infectious diseases. There is nothing in his experimental findings to indicate that the salicylates are deleterious in infection simply because they decrease immune substance formation. The decreases observed were never profound; and the salicylated animals always still produced some immune substances. It is probable, Swift adds, that the latter in the circulating fluids are not the only factors concerned in the process of recovery. The same mechanism, he concludes, that makes an infectious agent less antigenic might, at the same time, make it less pathogenic. It is possible that this effect may be more marked in rheumatic fever than in other infections; hence the more striking effect of the drug seen in this disease.

2. Clinical Effects of "Natural" and "Synthetic" Sodium Salicylate, Current Comment, J. A. M. A. **61**: 352 (Aug. 2) 1913; "Natural" and Synthetic Salicylates, ibid. **61**: 968 (Sept. 20) 1913; Salicylates, Uric Acid and Gout, ibid. **65**: 881 (Sept. 4) 1915; The Action of Salicylates, ibid. **66**: 122 (Jan. 8) 1916; The Fate of Salicylates in the Body, ibid. **73**: 1289 (Oct. 25) 1919; Is Free Salicylic Acid Liberated from Salicylate in the Circulation? ibid. **77**: 2064 (Dec. 24) 1921; The Rôle of Salicylates in Acute Rheumatic Fever, ibid. **78**: 1897 (June 17) 1922.

3. Swift, H. F.: The Action of Sodium Salicylate upon the Formation of Immune Bodies, J. Exper. Med. **36**: 735 (Dec.) 1922.

4. Barbour, H. G., and Devenie, M. M.: Acetylsalicylic Acid and Heat Regulation in Normal Individuals, Arch. Int. Med. **24**: 617 (Dec.) 1919. Barbour, H. G.: Acetylsalicylic Acid and Heat Regulation in Fever Cases, ibid., p. 624.

Current Comment

COMBINED URIC ACID IN THE BLOOD

Nearly a century and a half has elapsed since Scheele first isolated uric acid from urine and from urinary calculi. Only a few years later, Pearson demonstrated the presence of the same substance in the tophi of gout. In the subsequent period, various hypotheses regarding the physiologic significance of uric acid in the organism have been promulgated. Many of them have been almost fantastic in character, so that they have survived their period of advocacy by a short time at most. Others have persisted longer; thus, only a few years ago uric acid was held responsible for many of the ills to which human flesh is heir. Still other conceptions have become part of the enduring structure of knowledge regarding this unique biochemical substance. Instead of regarding uric acid as an incomplete product of the oxidative disintegration of simple proteins in the body, we have learned to recognize in it an end-product of the metabolism of purin precursors in man. Whatever the intermediate reactions may be, an increased output of uric acid is demonstrably an indication of an increased transformation of purin-yielding products, whether the latter are derived from the diet or have an endogenous origin in the cells and tissues of the body. Another acquisition of more recent years has been the demonstration that uric acid circulates in fairly constant concentration in the blood of man, an increment in the amount being indicative of a pathologic condition. The latest contribution is the proof of the presence of "combined" uric acid in the blood—a result clearly suggested by S. R. Benedict [1] several years ago. His investigations [2] demon-

1. Benedict, S. R.: Uric Acid and Its Relations to Metabolism, Harvey Society Lectures for 1915-1916, Philadelphia, J. B. Lippincott Company, p. 362.

2. Davis, Alice R.; Newton, Eleanor B., and Benedict, S. R.: The Combined Uric Acid in Beef Blood, J. Biol. Chem. **54**: 595 (Nov.) 1922. Newton, Eleanor B., and Davis, Alice R.: The Distribution of the Combined Uric Acid in the Corpuscles of Beef Blood, ibid. **54**: 601 (Nov.) 1922; Combined Uric Acid in Human, Horse, Sheep, Pig, Dog and Chicken Blood, ibid. **54**: 603 (Nov.) 1922.

strate the substance to be, in the case of beef blood, a compound of uric acid and a pentose sugar, ribose. Curiously enough, it is present only in the red corpuscles. Evidences of the presence of combined uric acid have been found in each species of animal studied. The quantity in beef blood far exceeds that in any other animal blood so far analyzed. Next in quantity would appear to be that of human blood. The physiologic significance of this newly demonstrated compound remains to be elucidated. In any event, the story of uric acid in the body has not yet been completely unfolded.

GINSENG

Ginseng is a plant of the genus *Aralia*, the root of which is highly valued as a medicine among the Chinese. It has found no place in our modern therapy, and one will search in vain for reference to it in the present day books on pharmacology. However, every product which has a reputation of having attained use in folk medicine will be found mentioned in recurring suggestions as to possibly neglected drugs. The feeling is widespread—and not entirely without historical justification—that plants which have secured some reputation for remedial potency, even though it may have been attained in the days anteceding modern scientific research, deserve careful consideration. The persistence of certain customs in the healing art, so it is argued, is more likely to be associated with some useful potency. In the case of ginseng, the attempts to establish this have been essentially unfruitful. Occasionally it has been reported that infusions or extracts of the root are diuretic. The most recent study of Inada and Takamizu [1] at the Keijo Medical College in Chosen shows that large quantities of extracts of ginseng may slightly increase the output of the urine, but that there is no effect whatever on nitrogen metabolism. Even the quack would find it difficult to discover a tenable potency on the basis of which the use of ginseng could be "boosted."

Association News

THE SAN FRANCISCO SESSION

Rates and Routes of Transportation to San Francisco and Return

The American Medical Association is advised that effective May 15 and daily thereafter until September 30, western railways will place on sale round trip tickets to San Francisco with a return limit of October 31. These tickets will permit stopovers at any point on the going or return trip merely by informing the conductor at which points passengers desire to stop. Rates from the cities named are:

From Chicago	$86.00
From Kansas City	72.00
From St. Louis	81.50
From Omaha	72.00
From St. Paul	87.50

Pullman rates from Chicago are:

Lower berth, Chicago to San Francisco	$23.63
Upper berth, Chicago to San Francisco	18.90
Compartment, Chicago to San Francisco	66.75
Drawing room, Chicago to San Francisco	84.00

If stopovers are made on the outward trip, a small additional sum is to be added to the Pullman rates quoted.

Lines east of Chicago made low rates to the Pacific Coast and return in the summer of 1922, and it is thought that such rates will be announced for the summer of 1923.

Those who go to San Francisco from Chicago have the choice of a large number of routes, some of which are as follows:

1. C. B. & Q. Railroad to Denver; D. & R. G. W. Railroad to Salt Lake; Western Pacific or Southern Pacific Railroad to San Francisco.
2. Rock Island Railroad to Denver; D. & R. G. W. Railroad to Salt Lake; Western Pacific or Southern Pacific Railroad to San Francisco.
3. C. & N. W. Railroad to Omaha; Union Pacific Railroad to Ogden; Western Pacific or Southern Pacific Railroad to San Francisco.
4. C. B. & Q. Railroad to Denver; Union Pacific to Ogden or Salt Lake; Western Pacific or Southern Pacific Railroad to San Francisco.
5. C. B. & Q., Rock Island, or C. & N. W. and Union Pacific Railroad to Denver; D. & R. G. W. or Union Pacific Railroad to Salt Lake; Union Pacific to Los Angeles; Southern Pacific to San Francisco.
6. Santa Fe Railroad to Los Angeles; Southern Pacific Railroad to San Francisco.
7. Rock Island Railroad to El Paso; Southern Pacific Railroad to Los Angeles; Southern Pacific Railroad to San Francisco.
8. I. C. Railroad to New Orleans; Southern Pacific Railroad to Los Angeles; Southern Pacific Railroad to San Francisco.

Going by any of the above named routes, passengers may return the same way or by any of the following routes, without additional charge:

1. Southern Pacific Railroad to Los Angeles; Santa Fe (Grand Canyon Route) to Chicago.
2. Southern Pacific Railroad to Los Angeles and El Paso; Rock Island Railroad to Chicago.
3. Southern Pacific Railroad to Los Angeles; Southern Pacific to New Orleans; I. C. Railroad to Chicago.
4. Southern Pacific Railroad to Los Angeles; Union Pacific to Salt Lake; D. & R. G. W. Railroad to Denver; C. B. & Q., Rock Island Railroad or any direct line to Chicago.
5. Southern Pacific to Los Angeles; Union Pacific Railroad to Ogden; Union Pacific to Omaha; C. B. & Q., C. & N. W. or C. M. & St. P. Railroad to Chicago.
6. Southern Pacific Railroad to Los Angeles; Santa Fe (Grand Canyon Route) to Denver; any line to Chicago.

Those who wish to return from San Francisco by way of Portland, Seattle and the North Pacific Coast will be required to pay $18 additional to the rates quoted, and tickets may be secured to read returning from San Francisco by the following routes:

1. Southern Pacific Railroad, San Francisco to Portland; Northern Pacific (Yellowstone Park Route) to St. Paul; any line to Chicago.
2. Southern Pacific Railroad, San Francisco to Portland; Great Northern (Glacier Park Route) to St. Paul; any line to Chicago.
3. Southern Pacific Railroad, San Francisco to Portland, S. P. & S. Railway to Spokane (Columbia River Route); Northern Pacific or Great Northern to St. Paul; any line to Chicago.
4. Southern Pacific to Portland; Northern Pacific, Great Northern or Union Pacific Railroad to Seattle; Great Northern or Canadian Pacific Steamship Company to Vancouver; Canadian Pacific Railroad to St. Paul; any line to Chicago.
5. Southern Pacific Railroad, San Francisco to Portland; Union Pacific Railroad to Ogden or Omaha; any line to Chicago.
6. Southern Pacific Railroad, San Francisco to Portland; Union Pacific Railroad to Salt Lake; D. & R. G. W. Railroad to Denver; any line to Chicago.

Any who wish to go to San Francisco and then to Los Angeles and return to San Francisco, Portland, Seattle and North Pacific Coast points will be required to pay $11.40 additional, besides the $18 required for the return trip by the northern routes.

An Invitation from the New Mexico Medical Society

The annual meeting of the New Mexico Medical Society will be held in Albuquerque, June 19-21. The local commit-

1. Inada, S., and Takamizu, J.: Studies on the Influence of Corean Ginseng on Metabolism, Japan M. World 2: 343 (Dec. 15) 1922.

tee of arrangements for that meeting and the secretary of the New Mexico Medical Society cordially invite Fellows of the American Medical Association going to the annual session in San Francisco to stop over at Albuquerque. Entertainment will be provided for them by the local committee of arrangements and the chamber of commerce of Albuquerque. Parties on special trains en route to San Francisco are invited to arrange their schedules so that at least one day may be spent at Albuquerque. Dr. J. W. Elder, secretary of the New Mexico Medical Society, extends for that society an invitation to the members and Fellows of the American Medical Association to spend as much time as can be arranged at Albuquerque during the meeting of his state medical society.

Special Trains to San Francisco

MICHIGAN GOLF SPECIAL.—Dr. W. T. Dodge, president, and Dr. F. C. Warnshuis, secretary, of the Michigan State Medical Society, have made tentative arrangements for a special train to the San Francisco Session. This train will be made up of compartment sleepers, diners, club car and observation car, and will have a barber, valet and maid. Leaving Chicago at 8 p. m., June 17, the Michigan Golf Special will arrive at San Francisco on Saturday morning, June 23. Each day stops will be made at places where good golf courses are to be found. An opportunity will be afforded for playing eighteen-hole matches. Reservations have already been made at these golf courses, and very complete arrangements have been perfected for the convenience of the passengers on this train. Members of the Association are invited to join this party and to bring their wives and other members of their families. The cost will be $235. This will include a round trip railroad ticket, half a compartment going, meals en route, taxi and automobile charges, green fees, caddy fees and other incidentals. The party will disband at San Francisco, and the return trip may be made over one of several optional routes. The Pullman fare returning will be extra. The cost of this trip is only $55 greater than the regular round trip fare. The party will be limited. Requests for reservations from states adjacent to Michigan may be sent to Dr. F. C. Warnshuis, Powers Theater Building, Grand Rapids, Mich.

OHIO STATE ASSOCIATION SPECIAL.—A special train to San Francisco has been arranged for the benefit of the members of the Ohio State Medical Association who will attend the annual session. Mr. Don K. Martin, Executive Secretary, Physicians' Building, Columbus, Ohio, will answer inquiries concerning reservations.

THE "MEDICAL SPECIAL DE LUXE."—The Harlan Tours, 202 South State Street, Chicago, will operate a special train to be known as the "Medical Special De Luxe," which will leave Chicago on the evening of June 16 and Minneapolis over the Soo Line on the morning of June 17. Special Pullman cars will be operated from Des Moines, St. Louis and Omaha, and will be attached to the special at St. Paul. Stops will be made at Banff, Lake Louise and Glacier in the Canadian Rockies, and interesting side trips have been arranged. Other stops will include Victoria, Seattle and Portland. One full day is to be spent on a steamer between Vancouver and Seattle, while at Portland the famous Columbia River Highway trip is planned. This train will arrive in San Francisco on Monday, June 25, but any members of the House of Delegates who may be on board will reach San Francisco on Sunday evening, June 24. Two return routes are offered, one overland direct, and the other leaving San Francisco on Friday, June 29, by way of the Big Trees, Santa Cruz, Del Monte, Santa Barbara, Los Angeles, Pasadena, Catalina Island, Salt Lake City, the Grand Canyon of the Arkansas, the Royal Gorge and Colorado Springs. In addition to this special train, the Harlan Tours will operate special cars overland direct to San Francisco, and tours by way of the Canadian Rockies and the Shasta Route, which will arrive in San Francisco before the beginning of the session. Reservations, information as to rates and schedules, and descriptive matter may be secured by addressing the Harlan Tours, 202 South State Street, Chicago, or L. H. McCormick, General Agent of the Rock Island Lines, Chicago.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Tributes to Physicians.—At a meeting of the state board of health in Montgomery, January 8, resolutions were passed paying tribute to Dr. S. W. Welch, state health officer, for educating the people to the extent that the death rate in Alabama from infectious diseases, notably typhoid and malaria, had been materially lowered.——Friends of the late Dr. M. W. Murray of Albany are sponsoring a movement which has as its purpose the erection of a maternity wing to the Albany Hospital, as a memorial to the physician. The estimated cost of the maternity annex would be $50,000. Dr. Murray practiced for thirty-two years in Albany.——Dr. J. D. Dowling, health officer of Birmingham, and Dr. George A. Cryer, health officer of Calhoun County, have been appointed members of the Royal Institute of Public Health of Great Britain by Col. Sir William Smith, president of the organization.

CONNECTICUT

State Public Health Association.—At the annual meeting of the association, January 10, in New Haven, the following officers were elected for the ensuing year: president, Dr. Thomas E. Reeks, New Britain; vice president, Dr. William H. Coon, Bridgeport; treasurer, James A. Marr, Bridgeport; and secretary, Dr. Charles P. Botsford, Hartford.

Society News.—At the annual banquet of the Bridgeport Medical Society, January 9, at the University Club, more than $2,000 was subscribed to a fund for the erection and maintenance of a home for the society. Following the banquet, Dr. William H. Curley was elected president; Dr. F. Winthrop Pyle, vice president, and Dr. Daniel P. Griffin, secretary.——Dr. E. Everett Rowell was elected president of the Stamford Medical Society to succeed Dr. Charles B. Keeler of New Canaan, at the annual meeting.——Drs. John E. Boucher and Arthur B. Landry were elected president and secretary, respectively, of the Hartford Medical Society at the annual meeting, January 1.

DELAWARE

Would Merge Health and Welfare Bodies.—A measure will be presented to the 1923 session of the legislature, authorizing the consolidation of all health and welfare commissions of the state into one body, to be known as the state health and welfare commission. This measure, which was outlined by the Delaware State Medical Society and the Homeopathic Society of Delaware and Peninsula, provides for the appointment of seven persons to act as the state health and welfare commission, four of whom shall be physicians, the other three members to be citizens representing Kent, Sussex and New Castle counties. Each member shall receive $10 for attending a meeting, but shall not receive pay for attending more than twenty meetings. The proposed commission would be vested with all the rights, powers, duties, obligations and authority of the child welfare commission, the mothers' pension commission, the tuberculosis commission and the state board of health, and would be authorized to take over all the property, rights, credits and records of these commissions.

DISTRICT OF COLUMBIA

Bill to Regulate Optometry.—The senate has passed a bill regulating the practice of optometry in the District of Columbia. The measure went through the upper body of Congress without a dissenting vote. The bill calls for the appointment of a board that shall have power to hold examinations and issue licenses for the practice of optometry in the district.

Medical Society of the District of Columbia.—At the annual meeting of the society held in Washington, January 3, under the presidency of Dr. Archie W. Boswell, the following officers were elected for the ensuing year: president, Dr. Luther H. Reichelderfer; vice presidents, Drs. J. Russell Verbrycke, Jr., and Edith L. Coale; recording secretary, Dr.

Coursen B. Conklin; corresponding secretary, Dr. Prentiss Willson, and treasurer, Dr. Edward G. Seibert.

Department of Public Welfare Proposed.—A bill to establish a department of public welfare for the District of Columbia has been introduced by Senator Spencer of Missouri. In addition to setting up a system with centralized authority for the handling of the welfare problems of the city of Washington, it contains proposals for the organization into four divisions of the functions of the department. These divisions would include mental diseases, child guardianship, corrections and administration. The bill would empower the new department to provide aid and assistance to deserving mothers with dependent children, provide for the commitment of insane and other mental defectives, establish a home for such persons in Maryland or Virginia and inaugurate clinics for the treatment and care of delinquent, dependent and neglected children.

ILLINOIS

Three Members of State Board of Pharmacy Suspended.—It is reported that D. P. Siebert, D. D. Moore and R. R. Barnes, members of the state board of pharmacy, were suspended, January 29, by the director of registration and education after they had been accused by two applicants for druggists' licenses of having accepted bribes to "fix" examination grades.

Jury Decision in License Scandal.—It is reported that William H. H. Miller, former head of the department of registration and education, was found guilty, January 27, of selling physicians' and pharmacists' licenses to persons unfit to receive them, of raising examination grades and of selling questions in advance of the state examinations. He was fined $1,000. Dr. N. Odeon Bourque, head of the "Chicago Medical School," where, it is asserted, doubtful candidates prepared for the examinations, was fined $250. His license has since been revoked. Miller's son-in-law, K. A. Fries, a former official in the department, was found not guilty.

Court Sustains Vaccination Order of Local Health Board.—January 16, the Lee County circuit court refused to grant an injunction which was sought for the purpose of preventing the Dixon school board from carrying out an order issued by the Dixon Board of Health. The board of health order was issued at the request of field physicians of the state department of public health who had found a number of cases of smallpox in the city; it required all children to be vaccinated against smallpox or be excluded from the public schools. The plaintiffs, a group of antivaccinationists, contended that an epidemic of smallpox neither impended nor existed in Dixon; that the disease present was not smallpox; that the order of the local board of health was not technically legal, and that vaccination did not necessarily have to be external in order to meet the requirements of the ruling of the board of health. A large number of witnesses were examined, the points enumerated being particularly emphasized. The court upheld the board of health at every point and dismissed the bill for lack of equity.

Chicago

Dinner in Honor of Dr. Hall.—Local physicians, graduates of Northwestern University, and students under Dr. Winfield Scott Hall, professor of physiology at Northwestern University School of Medicine, Chicago, gave a dinner in his honor at the Plaza Hotel, Danville, January 17.

Influenza and Pneumonia Deaths.—Fifty cases of influenza, with four deaths, and eighty-two cases of pneumonia, with fifteen deaths, reported over the week end, brought the total of influenza and pneumonia deaths in Chicago, since January 1, to 481, it was announced by Dr. Herman N. Bundesen, health commissioner.

Memorial Services for Dr. Haines.—Memorial services for Dr. Walter Stanley Haines, who died, January 27, were held in the upper amphitheater of Rush Medical College, January 31. Before the services the body lay in state in the laboratory of the college from 9 to 11 o'clock. All college activities were suspended for the day. Family services were held later in the week and were private. The funeral took place in the chapel at Rosehill Cemetery, February 2.

Criminal Defectives to Be Segregated.—Another attempt will be made to induce the Illinois Legislature to enact the bill providing for the establishment of a farm colony for criminal defectives, according to statements by Judge Trude of the morals court and Dr. William J. Hickson of the Chicago Psychopathic Laboratory. It is estimated that the experiment will cost about $1,000,000, but that the reduction in crime and court expenses will offset the expenditure.

Personal.—Dr. Carl F. Bertschinger, for more than thirty years a practitioner in Chicago, has been appointed vice consul by the Swiss government for the Chicago district. Dr. Bertschinger was born in Switzerland.——Dr. Edward H. Hume, dean of the Hunan-Yale College of Medicine, Changsha, China, addressed the Chicago Medical Society, January 24, on conditions in China.——Dr. Hiram H. Bay, for the last three years tuberculosis consultant for the U. S. Veterans' Bureau, Chicago, has resigned to accept the position of medical director of the Chicago Tuberculosis Institute.

Survey of Charitable Organizations.—Under the auspices of a committee appointed by the Chicago Council of Social Agencies and representatives of 158 social service agencies, and financed by the Commercial Club of Chicago, an intensive study of methods of financing the philanthropic and charitable organizations and institutions of Chicago will be undertaken. For the purposes of this study, organizations whose financial support comes from private sources have been classified in eight functional groups: child welfare, family welfare, health service, homes for adults, neighborhood welfare, protective, correctional and legal service, work for boys and girls, and miscellaneous organizations.

INDIANA

Ophthalmologists Elect.—At the annual meeting of the Indiana Academy of Ophthalmology and Otolaryngology, in Indianapolis, January 18, the following officers were elected: president, Dr. C. Norman Howard, Warsaw; vice presidents, Drs. A. L. Marshall, Indianapolis, and Dr. R. W. Cochran, Madison, and secretary-treasurer, Dr. B. J. Larkin, Indianapolis. Dr. John Green, Jr., St. Louis, addressed the meeting.

MAINE

City Health Officers Appointed.—Dr. Frederick M. Cole, Gardiner, has been appointed city physician.——Dr. Harry D. McNeil has been appointed full-time health officer of Bangor.——Dr. Lewis L. Mann has been elected city physician of Augusta.

Bowdoin Awards Fifty-One Scholarships.—Medical scholarships amounting to more than $6,000 were recently awarded by Bowdoin Medical School, Portland, from the Garcelon-Merritt Fund. A large number of these scholarships were awarded to former students of the Bowdoin Medical School who are pursuing their medical education elsewhere.

MARYLAND

Personal.—William Walter Cort, Ph.D., associate professor of helminthology, Johns Hopkins School of Hygiene and Public Health, has been appointed exchange professor in parasitology in the Peking Union Medical College, China, for the academic year beginning, October, 1923. Professor Cort is also planning to carry on an extensive study of hookworm disease in South China. He will head a party of four scientists to carry on research work under the auspices of the Peking Union Medical College. The expedition will be financed by the International Health Board of the Rockefeller Foundation. The other members of the expedition are Dr. George B. Grant, associate professor of hygiene at the Union Medical College; N. G. Stoll, a graduate student at Johns Hopkins School of Hygiene, and a native Chinese student. Ernest C. Faust, Ph.D., associate professor of parasitology at the Union Medical College, will exchange professorships with Dr. Cort.——Dr. Arthur M. Stimson, assistant surgeon general, U. S. Public Health Service, delivered a lecture on "Public Health Lessons from Rabies," January 23, and J. A. Le Prince, senior sanitary engineer, U. S. Public Health Service, delivered a lecture on "Malaria Control Problems" before the Johns Hopkins School of Hygiene and Public Health, January 23 and 29, respectively.——Dr. William H. Welch, director of the Johns Hopkins School of Hygiene and Public Health, has recently been elected an honorary member of the Société royale des sciences médicales et naturelles of Brussels, Belgium.——Dr. William T. Pratt has been appointed full-time county health officer for Montgomery County by the state board of health. The only other county having a full-time health official is Allegany, but the possibility of placing a full-time officer in each county in the state is under consideration by the board of health.——Dr. George Walker and Dr. Herbert C. Blake have been appointed members of the board of supervisors of city charities of

Baltimore.——The governor appointed Dr. Arthur P. Herring, Baltimore, commissioner of mental hygiene, January 13. Dr. Herring has been secretary of the state lunacy commission for the last fifteen years.

MASSACHUSETTS

Physician's License Suspended.—The board of registration in medicine has suspended the certificate of registration as a physician of Dr. Arthur Stanton Hudson, Boston, for one year, following a hearing based on a complaint that Dr. Hudson was associated with an unregistered practitioner of medicine. The man alleged to have been associated with Dr. Hudson was arrested, and his case will be presented to the grand jury.

Maternal and Infant Welfare.—The state department of public health has appointed an advisory committee to assist in the maternal and infant hygiene work in the state. This study will be made under an appropriation of $15,000, and the educational campaign will be carried out by means of newspapers, motion pictures and lectures. Drs. Edmond F. Cody, New Bedford; Halbert G. Stetson, Greenfield; Richard M. Smith, Boston; Fritz B. Talbot, Boston, and Dr. Robert L. DeNormandie, Boston, are members of the committee.

Society for Mental Hygiene.—Under the auspices of the Massachusetts Society for Mental Hygiene, the first of a series of seven weekly lectures to be given under the direction of the Connecticut Valley committee of the society was given at Springfield, January 3, by Dr. Pratt on "What Is Mental Hygiene and Why Does It Concern Everyone?" William A. Neilson, Ph.D., president of Smith College, presided. Arrangements have been made with the division of university extension of the state department of education to grant a credit certificate to students who satisfactorily complete the course. Other speakers include Drs. Douglas A. Thom, Abraham Myerson, George E. McPherson and Albert Warren Stearns.

MICHIGAN

Large Fine for Physician.—According to reports, Dr. Birch J. Hamilton, formerly physician at the house of correction, Detroit, was fined $1,000 in the federal court, recently, when he pleaded guilty to violation of the Harrison Narcotic Law.

Sentence for Chiropractor.—It is reported that F. O. Logic, chiropractor of Iron Mountain, under suspended sentence from the November term (THE JOURNAL, Nov. 11, 1922, p. 1195), following his violation of the court's injunction to stop practicing, has been sentenced to ninety days' hard labor in the county jail.

University Fees Increased.—Regents of the University of Michigan, Ann Arbor, announced, January 26, that advanced student fees will be in effect, dating from the autumn semester. The greatest increase will be paid by students in the medical school and dental college, where the increase is $38 for residents of Michigan and $58 for all others. For other schools and colleges, the increase is $3.

New Marine Hospital Proposed for Detroit.—Detroit is to have a new marine hospital if the bill introduced by Representative Brennan successfully passes both houses of Congress. The measure presented this week authorizes the Secretary of the Treasury to sell the present United States marine hospital reservation and its properties at Detroit, and to use the proceeds for the acquisition of a new site and the construction of a new hospital with all needed facilities.

Prof. Boldyreff at Battle Creek.—Prof. William Nikolai Boldyreff has taken a position at the Battle Creek Sanitarium, where he will conduct research along lines similar to those followed by him with Pawlow in Petrograd. Professor Boldyreff was an assistant to Pawlow from 1902 to 1912. From 1912 to 1917 he was professor of pharmacology in Kazan, Russia. During the war, he did research work on gas poisoning, in collaboration with French and English scientists, under the direction of the Red Cross. Before coming to America, he lectured in several Japanese universities on physiology. Of about 100 contributions by him to the literature, forty have concerned problems of nutrition and the physiology of digestion.

MISSISSIPPI

State Medical Meeting.—The annual meeting of the Mississippi State Medical Association will be held at Vicksburg, May 7-9, instead of at Jackson, May 8-9, as previously announced. Lack of hotel accommodation in Jackson is the reason given by Dr. Sydney W. Johnston, president of the association, for the change.

MISSOURI

Health Show.—Under the auspices of the health department, a show to visualize the fundamentals of healthful living and environment will be given in the Coliseum, St. Louis, February 24 to March 4, with the cooperation of local organizations. Thirty-five per cent. of the proceeds will be used for public health work.

American Library Association.—The St. Louis chapter of the association met at the Washington University School of Medicine, January 24. Dr. H. S. Gasser, professor of pharmacology, spoke on "William Beaumont," and Dr. Major G. Selig, professor of clinical surgery, spoke on "Personal Recollections of Prof. Julius Pagel." The Beaumont collection of manuscripts and books, and the Pagel collection on the history of medicine, were on exhibition.

NEW HAMPSHIRE

Personal.—Dr. John M. Gile, dean of the Dartmouth Medical School, Hanover, has been appointed a life member of the board of trustees of the college, to succeed Gen. Frank S. Streeter, Concord, who died recently.——Dr. William M. Parsons, Manchester, recently celebrated his ninety-seventh birthday. Dr. Parsons is still in practice.

City Physicians Appointed.—At the recent elections of various boards of health, Dr. Patrick J. Kittredge was appointed city physician of Portsmouth; Dr. Deering G. Smith was reelected city physician of Nashua, and Dr. Allen P. Richmond was appointed city physician of Dover, Dr. Walter H. Lacey of Keene and Dr. Charles Henry Cook of Concord.

NEW YORK

Illegal Practitioners Fined.—It is reported that Philip Kaiser, an optician of Baldwin, L. I., was fined $250 in the court of special sessions, December 22, when convicted of practicing medicine without a license.——Reports state that Walter S. Hidder, Saranac Lake, was fined $25, January 9, for posing as a physician in order to obtain narcotics for another man.

A New Drug Bill.—A bill was introduced into the legislature, January 24, by Assemblyman Maurice Bloch of Manhattan, which provides for regulation of the distribution of habit forming drugs in this state. The proposed legislation is to take the place of the Whitney Narcotic Law, the repeal of which, according to the sponsors of the bill, has resulted in an alarming increase in the number of addicts and dope sellers. The new bill would permit the commitment to an institution for treatment of persons who are habitual drug users.

State Hospital Commission.—Miss Harriet M. Mills, Syracuse, has been named by Governor Smith a member of the state hospital commission to succeed the late Cyrus E. Jones. This commission consists of three members—a physician, a lawyer and a layman. Miss Mills, the lay member, is the first woman appointed on the commission. Her term is for six years. Dr. C. Floyd Haviland, chairman, is the representative from the medical profession and Arleigh Richardson, the legal member. More than half of the 40,000 inmates of the thirteen civil hospitals for the insane are women, it is stated.

New York City

Suicides and Homicides.—In a preliminary report for the year 1922, Dr. Charles Norris, chief medical examiner, presents statistics showing that deaths due to violence or mishap in this city have not materially increased during the past year. There were 663 suicides. The number was greater among married than among single persons, there being a total of 315 married men and 141 married women as against 151 single men and 56 single women. There were 350 homicides in 1922, as against 307 for the year 1921.

Decision Reserved on Medical Whisky.—The suit of Dr. Samuel W. Lambert and other physicians for an injunction restraining the government from enforcing the medical provisions of the Volstead Law was tried in the United States district court, January 26, before Judge John C. Knox. Judge Knox accepted briefs from Joseph S. Auerbach, attorney for the complainants, and John Holley Clark, Jr., assistant United States attorney, who was the defendant, but decision was

reserved. He suggested that the proper course in the case would be for the physician to violate the law, confess his fault and make it a test case.

Health Center Completes First Year.—The East Harlem Health Center, which represents a consolidation of health agencies in that locality, working in cooperation with the American Red Cross and the New York City Health Department, has recently completed its first year of work. Six organizations in 1921 made expenditures of about $175,000 for health and family relief. Last year, under the direction of the health center, an immensely increased service added only $15,000 to the total expense. The plan has made it possible to serve a much larger number of people, thereby reducing the per capita cost of health service.

Hospital News.—Plans have been completed for a new seven story stone and brick building to take care of 400 nervous convalescent patients who are now quartered in the original building, opened at Bellevue in 1916. The cost of the new building will be met by a fund of $2,500,000, for which application is pending before the board of estimate. ——The New York Nursery and Children's Hospital, in its annual report, shows that, for the year ending Sept. 30, 1922, only four of the 2,395 mothers who availed themselves of the obstetric service of the hospital died. Thus, the death rate was 17 per ten thousand patients for the year, while the death rate in the registration area of the United States was approximately 90 per ten thousand. There was not a death during the year among the 635 mothers cared for in their homes by the hospital outpatient obstetric department, it is stated. The hospital will celebrate its centennial this year. When founded in 1823, its plant consisted of a house rented for $5.50 per week. Today the property is valued at $400,000. More than 25,000 babies have been born in the hospital.

NORTH CAROLINA

Board of Health Elections.—Dr. Sidney E. Buchanan, Concord, was reappointed county physician for another term of two years, January 8.——Dr. George B. Nance, Monroe, has been reelected county physician and quarantine officer of Union County. —— Dr. Robert G. Wilson, Biltmore, was unanimously reelected health officer of Buncombe County at the annual meeting of the board of health.——Drs. Robert L. Gibbon, Charlotte, and Edgar H. Hand, Pineville, have been appointed members of the board of health of Mecklenburg County.

NORTH DAKOTA

Fargo Selected for Health Survey.—Fargo has been chosen as the first demonstration center in child health work by the Commonwealth Fund Appropriations Committee, it was recently announced. The Commonwealth Fund of New York, it was announced sometime ago in THE JOURNAL, will finance a child health program in three typical cities of the United States for a period of five years, for the purpose of studying maternal and infant mortality.

OHIO

Hospital News.—The new addition to the Mercy Hospital, Columbus, was formally opened to the public, December 15. This addition, the third in as many years, was erected at a cost of $60,000. Ground will also be broken early this year for a new nurses' home, to cost $150,000.——A new $50,000 building will be erected at the state feebleminded institution, Columbus, it is announced by Dr. L. J. Everich, director of the institution.——Bids closed, January 25, for a $75,000 hospital building for Miami University, Oxford.——Dr. John H. Berry, superintendent of the Athens State Hospital for the Insane, assumed charge of the Dayton State Hospital, January 5, succeeding E. A. Baber, who recently left to take charge of the Longview Hospital, Cincinnati.

OKLAHOMA

Hospital News. — The contract has been let for the new maternity hospital to be erected in Tulsa at a cost of $125,000. The Woman's Hospital Association is the donor.

Personal.—Dr. John T. Wharton, Miami, has resigned as county health officer of Ottawa County to accept the appointment of superintendent of the Soldiers' Tuberculosis Sanatorium at Sulphur, a newly completed institution. —— Dr. William P. Mills was recently elected president of the Rogers County Medical Society.——Dr. Martha L. Beldsoe, Chickasha, has been reelected president of the Grady County Medical Society.

OREGON

Sentence for Dr. Standard. — It is reported that Dr. D. Everette Standard, Huntington, formerly of Nampa, Ida., was sentenced in the federal court at Portland to thirteen months' imprisonment at McNeils Island Penitentiary, for fraudulent use of the mails, when he was convicted on a charge of sending drugs intended for illegal purposes through the mail.

PENNSYLVANIA

Philadelphia County Medical Society.—At the annual meeting of the society, Dr. David Riesman was elected president for 1923; Dr. Edwin S. Cooke, vice president; Dr. Henry G. Munson, secretary, and Dr. Edward A. Shumway, treasurer.

Personal.—Dr. Benjamin H. Patterson, Wilkinsburg, has been elected to the Pennsylvania legislature from the twelfth district of Allegheny County.——Dr. Francis D. Patterson, Harrisburg, chief of the division of industrial hygiene and engineering of the state department of labor and industry, has resigned to engage in consulting work and industrial medicine.——Dr. Lawrence Litchfield, Pittsburgh, president of the Medical Society of the State of Pennsylvania, gave an address at the annual meeting of the Armstrong County Medical Society, January 10, at Kittanning.

Graduate Courses at Home.—An elaborate program whereby physicians in all parts of the state will be given all the advantages of modern graduate medical instruction without leaving their homes has been put into operation by the graduate school of medicine of the University of Pennsylvania, Philadelphia. Dr. George H. Meeker, dean of the school, is working out the details of the project. Professors of the graduate school will be sent out at stated intervals to lecture and conduct clinics, and to describe recent phases in the progress of medicine and surgery, in various parts of the state.

Philadelphia

Community Health Center Dinner.—Dr. Michael M. Davis, Jr., New York, spoke, January 7, at the annual meeting of the community health center at the St. James Hotel, when plans for the continued relief of malnutrition among the schoolchildren of South Philadelphia were among the subjects discussed. Stanley Folz, president of the institution, tendered a dinner to the officers and directors. Dr. David Riesman of Philadelphia presided.

UTAH

Personal.—Dr. Frederick E. Straup, Bingham Canyon, has been appointed county physician of Salt Lake County to succeed Dr. Alfred Cyril Callister of Salt Lake City. —— Dr. LeRoy C. Potter, Provo, has been reappointed physician of Utah County. —— Dr. Roy H. Wilson, Ogden, has been reelected city and county physician.

WASHINGTON

King County Medical Society.—At the annual meeting of the society at Seattle, January 8, the following officers were elected for 1923: president, Dr. Charlton E. Hagyard; vice president, Dr. John Hunt, and secretary-treasurer, Dr. Raymond F. Hain.

Personal.—Dr. George W. Wimberly, Toppenish, sustained a crushed leg recently when his automobile started backwards, pinning his leg beneath it.——Dr. Charles M. Doland, Spokane, was recently elected president of the Spokane County Medical Society.

State Board of Health Meets.—The semiannual meeting of the state board of health was held, January 15, at Olympia. The legislature was requested to appropriate $8,000 for a survey of the Yakima Valley, in which there has been an annual epidemic of typhoid fever and enterocolitis.

Hospital News.—Following a nine-year campaign for funds, the new Norwegian Hospital, Seattle, has been completed. It was formally dedicated, January 7, with appropriate exercises. Although dedicated primarily to the need of Norwegians, the institution is open to all and is nonsectarian. Miss Gertrude Anderson, formerly of the City Hospital, Seattle, has been appointed superintendent of the new hospital. It is a fifty-bed institution.——Buildings will be erected by the House of Providence and St. Vincent's Home for the Aged, Seattle, at a cost of $1,000,000.

WEST VIRGINIA

Four Year Course for West Virginia.—A committee of the West Virginia Medical Society appeared before the state board of education at Charleston, January 18, to urge the inauguration of a four years' medical course at the West Virginia University School of Medicine, Morgantown. If necessary, the project will be placed before the legislature, it was stated by Dr. J. N. Simpson, dean of the medical school and president of the state medical society.

WISCONSIN

Health Exposition.—A health show will be conducted in Milwaukee during the week, April 21-28, under the auspices of the state board of health. A citizens' committee has been created, and directors and officers have been elected. The exhibits shown at the Chicago Pageant of Progress will be on view. Any profits from the exposition will be used to promote child welfare in the city, Dr. George C. Ruhland, health commissioner, states, and in the event of financial failure of the show, citizens backing the movement will incur no expense.

WYOMING

State Medical Society Dues.—The annual dues of the Wyoming State Medical Society have been increased to $10, and are made payable during January each year. The secretary writes that if a member does not pay his annual dues during that month, he will not be entitled to the benefits of the medical defense of the society.

CANADA

Hospital News.—Dr. Archibald McCausland, St. Thomas, has been appointed assistant superintendent of the Homewood Sanatorium, Guelph, Ont., to succeed Dr. Ray L. Whitney, resigned.——The Ancrum Brae Hospital, Stratford, owned by Dr. Michael Steele, formerly member of the Canadian parliament, was recently practically destroyed by fire. Dr. Steele had only recently remodeled the institution.——Dr. Abraham Groves has presented his private hospital, the Royal Alexandra, to the town of Fergus.——The War Memorial Hospital for Sick Children, London, Ont., was formally opened recently, and handed over to the city to be operated in connection with the Victoria Hospital. Colonel Gartshore, the chairman of the Victoria Trust Hospital, donated $10,000 toward the endowment of the new institution.——The Sydenham Hospital, Kingston, will be closed permanently and the patients will be transferred to Toronto, and St. Anne de Belleville, Quebec, on account of the recent fire which partially destroyed the buildings.

Personal.—Dr. William H. Hattie has resigned as health officer for Nova Scotia, to accept the chair of public health and hygiene at Dalhousie University.——Dr. F. G. Banting of Toronto University spoke on "Insulin in the Treatment of Diabetes," before the Orange Mountain (N. J.) Medical Society, December 22.——Prof. Howard B. Whidden, president of Brandon (Manit.) College, has resigned to accept the position of chancellor of McMaster University, Toronto. ——Dr. Wilfred Grenfell, medical missionary from Labrador, lectured in Williamsport, Pa., January 12, at a dinner given in his honor by the Williamsport Ministerial Association.——Dr. W. P. Tew has been appointed demonstrator of gynecology at the Medical Faculty of Western University.——Dr. Graham Campbell, formerly superintendent of buildings and grounds of the University of Toronto, has offered the governors of the university $5,000 to found a memorial scholarship in pathology, to be known as the John J. Mackenzie Memorial Scholarship.——Dr. William Duane, professor of biophysics at Harvard University, Boston, recently gave a lecture on the treatment of cancer to a large number of physicists and students at the University of Toronto.

HAWAII

Donations for Clinics.—Business men of Honolulu have raised a fund of $20,000 for nutrition work in the islands, it was recently announced by Dr. William R. P. Emerson of Boston, who has just returned from conducting an institute in Honolulu. In connection with the work, a tonsil-adenoid clinic will be established, for which an additional sum of $15,000 was donated.

GENERAL

Japanese Physicians Coming.—Baron Yoshihiro Tagaki, chief surgeon of the Tokio Charity Hospital, is one of six physicians who have planned to tour the United States and Canada at the invitation of the Rockefeller Foundation. The party will sail for San Francisco, February 23.

Typhoid Death Rate in Large Cities in 1922.—In summarizing the deaths from typhoid fever in 1922 in forty-three large cities, the United States Public Health Service found a rate of 3.1 per hundred thousand population against a rate of 3.6 in 1921. The highest rate shown for 1922 is 16.7 for Nashville, Tenn. The lowest rate was zero for Providence, R. I., and New Bedford, Mass., in which cities no deaths occurred from typhoid during the year.

Committee to Consider Bill on Prevention of Conception.—A subcommittee, consisting of Senators Cummins, Colt and Ashurst of the Committee on Judiciary, has been appointed to consider Senate Bill 4314 which proposes to repeal that portion of the federal code making it a crime to ship through the mails, advertise or deal in or import any article for the prevention of conception. This bill was originally introduced at the instance of the Voluntary Parenthood League.

Fund for German and Austrian Laboratories.—A fund is being raised for German and Austrian laboratories, the desperate financial condition of which is well known, by those who have worked in them. The fund has reached $1,315. If any one desires to help a specified laboratory or a specified head of a laboratory, any contribution given will be sent directly to the person in charge. Checks of $5 or more will be welcomed, made payable to Dr. Graham Lusk, treasurer, 477 First Avenue, New York.

Relief Bills for the Blind.—At the fourth annual meeting of the Federation of Workers for the Blind, held in Albany, N. Y., recently, the compulsory education of the blind child and the possibility of legislation to enforce medical treatment for specific diseases were discussed. Proposed changes in the recently enacted relief bill were also discussed. This law permits the state commission for the blind to appear before the board of county supervisors (and in Greater New York before the New York City Board of Estimate and Apportionment) to ask relief for blind persons. The supervisors may give or withhold aid, since the law is not mandatory.——Senator Spencer of Missouri has introduced an amendment to the District of Columbia appropriation bill, providing $5,000 for the National Library for the Blind, and another giving an additional appropriation of $1,500 for the Columbia Polytechnic Institute for the Blind.

Children's Bureau Answers Questions on Child Labor.—In response to requests for information regarding child labor in the United States the Department of Labor, through the Children's Bureau, has issued a pamphlet on this subject the text of which takes the form of answers to ten questions. The pamphlet shows that over one million children 10 to 15 years of age were reported by the 1920 census as gainfully employed, 378,063 of whom were less than 14 years old. These figures indicate a considerable decrease from 1910, but a large part of the decrease is apparent rather than real, since it was due to changing the census date from April, as in 1910, to January. In farm work and certain other seasonal occupations fewer children are employed in winter than in spring. A census taken at the present time would doubtless show a larger number of employed children than in January, 1920, when a period of industrial depression began and the federal child-labor tax law which tended to discourage the employment of children was in effect. The cover map shows that only seventeen states have as high requirements with respect to children's employment in factories, mills, canneries, and workshops as had the two federal laws, now declared unconstitutional. Other maps show the varying standards in force in the states with respect to child labor. The minimum age, for example, at which children may be employed in factories varies from 16 years in two states, and 15 years in five others, to 12 years for boys in one state and no age minimum at all in two others. Single copies of this pamphlet, "Child Labor in the United States: Ten Questions Answered," may be obtained free of charge from the Children's Bureau, U. S. Department of Labor, Washington, D. C.

Bequests and Donations.—The following bequests and donations have recently been announced:

Youngstown City Hospital and Lakeside Hospital, Cleveland, $100,000 each, under the will of William G. Pollock of Cleveland.

Santa Barbara (Calif.) Cottage Hospital, $100,000 for a new nurses' home, by Mr. and Mrs. G. O. Knapp of Montecity.

Exeter Hospital, Exeter, N. H., $50,000 for improvements to the institution, by an anonymous donor.

Kewanee (Ill.) Public Hospital, $38,000, by subscriptions.

St. Agnes', St. Mary's, St. Joseph's, St. Vincent's and the Misericordia hospitals, Philadelphia, share in $25,000, donated by Gimbel Brothers of Philadelphia, January 1.

New Hampshire Orphan's Home, Franklin, $20,000; Boston Floating Hospital, $10,000, and the Cottage Hospital, Woodsville, N. H., $5,000, by the will of Charles B. Henry of Lincoln.

Sharon (Mass.) Sanatorium, $20,000, for the establishment of a free bed for women and children, as a memorial to Louis Agassiz Shaw; and a further sum of $1,000.

Hahnemann College and Hospital and the Samaritan Hospital, Philadelphia, equal shares of the estate on the death of his mother and sister, by the will of Edward H. Herbein.

Salvation Army Hospital, New York, $19,000; St. Anthony's Hospital for Tuberculous Patients, Woodhaven, L. I., and the Sanatorium Gabriels, Gabriels, N. Y., each $10,000; the Free Industrial School for Crippled Children, New York, and St. Joseph's Association for the Blind, Jersey City, each $5,000; the residuary estate to be divided equally among the Flushing, St. John's Hospital, Long Island City, St. Joseph's Hospital, Far Rockaway, and St. Vincent's Hospital, Manhattan, by the will of John W. Rapp.

Montefiori Home and Hospital, New York, $10,000, under the will of Adolphus S. Bendheim.

The Jewish Charities and the Cleveland Jewish Orphan's Home, $5,000 each, under the will of Philip Stein of Chicago.

Lankenau Hospital and the Methodist Episcopal Hospital, Philadelphia, $5,000 each, for the establishment of free beds, by the will of Henry O. Deshong.

Cooper Hospital, Camden, N. J., $5,000, the result of a benefit ball.

Bradbury Memorial Hospital, Belfast, Me., $5,000, to endow a free bed for the town of Northport, by the will of Mrs. Norman H. White.

William Major Hospital, Shelbyville, Ind., $1,000, and $500 to the county tuberculosis association, by the will of David L. Wilson of Shelbyville.

Quincey City Hospital, $500 and one third of the residue of the estate, and $500 to the graduates nurses' association of the training school of the hospital, by the will of the late Richard L. Harper.

The Babies' Hospital, Newark, N. J., $100, in memory of the late Dr. Miller R. Whitenack, by his friends.

Grant County Hospital, Marion, Ind., funds for the establishment of a laboratory, to be known as the Barbara Bedell Memorial, by Mr. and and Mrs. Harry Bedell of Marion, in memory of their daughter.

Ten acres of land near Barstow, Calif., for a tuberculosis sanatorium, on condition that a building or cottages are erected by others, by Mrs. L. E. Arnold of Los Angeles.

Catawba Sanatorium, Catawba, Va., funds for the permanent support of a free bed will be provided by the Lions' Club of Roanoke.

LATIN AMERICA

Personal.—Dr. A. Brioso Vasconcelos has been appointed professor of public health in the army medical school of Mexico City.

Mexican Society Elects Officers.—The Merida branch of the Mexican Medical Association has elected the following officers: president, Dr. F. Saurí Reyes; vice president, Dr. A. Rivero Trava; secretary, Dr. V. Rodríguez Arjona; undersecretary, Dr. Silvio Hernández; treasurer, Dr. S. Díaz y Díaz; members, Drs. R. Pinto Manzanilla, Mauro Buenfil, Adolfo González, C. González Ortiz, O. Carpizo Montero, D. Hernández Fajardo, Eulalio Montero, Esteban Encalada, Antonio Aguilar P. and A. Bolio y Bolio.

Personal.—Dr. Leonidas Avendaño, professor of legal medicine at the University of Lima, and delegate from Peru to the recent Latin American Medical Congress at Havana, was the guest of honor at a gala breakfast arranged by the Medicolegal Society of Cuba. The *Revista de Medicina Legal* reproduces the speeches.——Dr. M. V. Quiroga, professor of pathology at the University of Buenos Aires, member of the Argentine legislature, and surgeon major in the army, has retired from his academic position, having reached the age limit.——Dr. Karl Reuter of Hamburg, known for his research on conservation of animal and vegetable tissues by refrigeration, is visiting at Buenos Aires.——Dr. F. M. Fernández of Havana, secretary of the recent Latin American Medical Congress at Havana, has been elected a corresponding member of the Caracas Medical Society. The *Revista*, published by the society, recalls that he is the founder of the *Revista Cubana de Oftalmología* and editor of the *Crónica Médico-Quirúrgica*, is on the editorial staff of three other journals, and is a member of several American and international medical and ophthalmologic societies.

Organization of the Profession in Brazil.—The recent National Congreso dos Praticos in Brazil has given a great impetus to the movement for organization of the profession. The *Folha Medica* explains that the medical societies for scientific purposes do not have time or inclination to discuss the practical problems involving the material interests of the profession. Some countries, such as Germany and Spain, and now Czechoslovakia, compel the enrolment of all physicians in such an organization, the *Aerztekammer* or *colegio*, and Argentina and Uruguay have taken the lead in organizing a syndicate which is rapidly enlarging its membership, and doing good work in a number of lines. The *Folha Medica* remarks that the first tasks of such an organization are to draw up a code of ethics, and to serve as intermediary between the profession and the government, the spokesman and legal representative of the profession. Permanent committees should be entrusted with the task of systematic denunciation of quacks to the authorities, and the regulation of minimal fees. "All for each and each for all—this is the synthesis of the proposed syndicate." The editorial continues, "The degree of civilization attained in a country may be estimated by its capacity for organization," and points to Germany as an illustration of the noncrushable vigor conferred by close and long continued organization.

FOREIGN

Another Centennial.—The world-wide use of Esmarch's bandage recalls that Jan. 9, 1923, is the centennial of the birth of the surgeon Friedrich von Esmarch. He died at Kiel in 1908.

English-American Hospital in Madrid.—The English and American colonies in Madrid are about to open a hospital. There will be an English physician at its head, but the rest of the staff will be Spanish.

The Dejerine Foundation.—The minister of hygiene, the dean of the medical faculty and others are to join in the official inauguration of the Dejerine foundation and neurologic museum at Paris this month.

Cancer Prize at Vienna.—The *Wiener klinische Wochenschrift* states that the Austrian Cancer Research Society has offered a prize of 2,000,000 crowns for a work by some German-Austrian scientist, in the course of 1923, which represents fundamental progress in the cancer problem.

Advertising of Medical Articles in Paris.—Again the date has been postponed for the enforcement of the municipal regulation forbidding the advertising in the comfort stations of Paris of medical or pharmaceutical articles. The regulation was the result of discussion in December, 1919, but the days of grace for the advertisements have been extended to March 31, 1923.

The Pasteur Centennial in Norway.—The celebration at the University of Christiania was imposing, with music and an address. It was announced that the Pasteur fund established in 1892 in honor of the seventieth birthday of Pasteur had received many donations. It provides stipends for Norwegians making a special study of the causes of infection or industrial applications of fermentation.

Jenner Centenary Exhibition.—The Wellcome Historical Medical Museum, London, arranged a special exhibition of personal relics, pictures, engravings, drawings, documents, manuscripts, and letters relating to the discovery of vaccination, in connection with the commemoration, January 26, of the centenary of the death of Dr. Edward Jenner. The exhibition will remain open for some months.

Flügge Foundation.—In honor of the seventy-fifth birthday of Dr. Karl Flügge, professor emeritus of hygiene at the University of Berlin, the Flügge endowment has been founded by the Koch Fund for Combating Tuberculosis. The list of Flügge's works is a long one, but his name is best known for his research on droplet infection. The *Zeitschrift für Hygiene und Infektionskrankheiten*, which he founded, with Robert Koch, in 1885, issued a special volume as a *Festband* on the occasion.

Pasteur Centennial at Berlin.—The Institute for Infectious Diseases at Berlin organized a centennial celebration, with addresses by Neufeld, the director, and by Wassermann. The latter said that Pasteur's research with silkworms was the first systematic epidemiologic work on a scientific basis for the combating of infectious diseases. The meeting concluded with a visit to the Robert Koch mausoleum in the building, where there is a memorial tablet to Koch presented by the officials of the Paris Pasteur Institute at the time of his death.

Community Health Survey in China.—Community health surveys are sufficiently uncommon in this country to attract attention. A few have been made in large cities and in counties. THE JOURNAL recently commented on the Cleveland Hospital and Health Survey, which after two years, the time of reporting, had contributed to important city improvements. It is interesting to note that Kuling, China, has had a community health survey "made by public-spirited residents under the direction of physicians." The full report covers sixty pages.

Seventy-Fifth Anniversary of the French Biologic Society.—It is announced that the French Société de biologie, at

Paris, will celebrate its seventy-fifth anniversary, May 26, 1923. Delegates are expected from its affiliated societies, seven in France and one at Petrograd, Buenos Aires, Lisbon, Athens, Copenhagen, Bucharest, Cluj and Jassy, Stockholm and Lithuania, and from the Société belge de biologie. Three questions have been appointed for discussion: "Generation and Fecundation"; "Physiologic Action of Potassium and Calcium," and "Immunity in Invertebrates."

Dangerous Drugs Act.—The home office has recently issued a memorandum defining the duties and obligations of registered physicians and dentists in regard to the Dangerous Drugs Act of Great Britain. It states that a physician or dentist who obtains, or attempts to obtain, the drugs for a purpose not covered by his authorization, or who infringes any of the regulations, if convicted, is liable to a fine of £200 ($950), or imprisonment for six months, or both. Further, the home secretary has power, after the conviction of any physician or dentist, to withdraw his authorization, which would deprive him of the right to possess or supply drugs.

Drugs Required by Merchant Shipping Acts.—Article 15 of the Dangerous Drugs Regulations (Great Britain) authorizes the master of a ship not carrying a duly qualified medical practitioner to obtain supplies of the drugs required by the Merchant Shipping Acts. This provision does not apply to other than British ships. It is now suggested, however, that port medical officers of health be authorized by the Secretary of State to grant certificates for the supply to American and other foreign ships of a quantity of the drugs sufficient for the period of the voyage to the home port. The minister of health of Great Britain has addressed to port sanitary authorities a circular inquiring whether they would be willing to allow their medical officers to give the necessary certificates.

New Danish Law on Marriage and Divorce.—The *Ugeskrift for Læger* publishes the paragraphs of the new law which affect physicians, and comments on the opposition some of them have roused in medical circles. Marriage is prohibited to the insane and feebleminded, and the decision as to the mental condition must be certified by a duly authorized physician. The physicians regarded as "duly authorized" are only the state medical officials and the physicians connected with institutions for the insane and feebleminded. Marriage is also forbidden to persons with venereal disease or epilepsy unless both parties are thoroughly informed of the diseased condition and its dangers for the consort and the offspring. The editorial declares that this setting of venereal disease apart, in a class by itself, is directly contrary to what is being aimed at in the general preventive and curative measures against venereal diseases.

The Netherlands Council on Pharmacy and Chemistry.—The fourth report has just been issued. It forms a pamphlet of about fifty pages, and discusses an ethical proprietary preparation of digitalis, and a large number of other proprietaries, mostly nostrums. It is emphasized that in seventy proprietaries investigated, of the most diverse origins, not one new point of view for therapeutics was discovered. The remedies are said to have proved to be either inert substances, obsolete drugs revived or modern drugs, such as physicians are using, but given a fanciful name, and the correct dosage disregarded. Especial stress is placed on the proprietaries offered to combat a certain symptom, fever, diarrhea, headache, pain in the throat, and smarting urine. There is danger in this for the patient as the symptom may be a manifestation of poisoning, diphtheria, cancer or the like. The symptoms of beginning typhoid, scarlet fever, diphtheria or dysentery may be thus masked until infection is spread broadcast.

Prizes of French Academy of Medicine.—The Academy of Medicine at Paris had fifty-nine endowed prizes to award in 1922, and 133 articles were received in competition. This year again the secretary commented on the handicap resulting from too specific directions in regard to the awarding of a prize, as conditions change rapidly from year to year. During the year, two new prizes were endowed: one pertaining to questions of general hygiene and the other to the medical treatment of facial neuralgia. The Herpin prize, for the "Abortive Treatment of Poliomyelitis," was awarded to Dr. A. Pettit of the Pasteur Institute, for his wonderful results with his antipoliomyelitis serum. He takes for the antigen the virulent medulla of monkeys. This year again the Audiffred prize "for a sovereign remedy for tuberculosis," consisting of a 3 per cent. government bond and representing an income of 24,000 francs, was not awarded, although six competing works were received. Nineteen of the prizes were not awarded; no competing articles were received for four of them. The recipients of the prizes were all physicians in France or the French colonies, with the exception of Prof. C. Pezzi of Milan, who shared with Laubry of Paris a prize for their "Manual on Congenital Heart Disease." All but ten of the prizes are open to international competition. Competing articles must be in French or Latin, and must be in the hands of the secretary by March 1. The *Bulletin* of the academy for December 12, gives the conditions of the competition.

Personal.—Dr. I. de Villa, president of the *Colegio de Médicos*, was recently elected mayor of Valladolid.——Prof. Ricardo Lozano of the chair of surgery at the University of Saragossa has been lecturing in Paris as interchange professor.——The Société des sciences médicales of Montpellier and Languedoc recently elected Dr. Euzière as president and Drs. Guiber and Maffre as vice presidents. Dr. G. Giraud was continued as secretary.——Sir Edward S. Schafer, professor of physiology since 1899 at the University of Edinburgh, was recently presented with a token of esteem by his present and past demonstrators and fellow research workers in London and Edinburgh, in the form of a life-sized bronze plaque mounted in stone, which will eventually be placed in the university, by Sir Edward's desire. Medals will be presented to each of the many subscribers. The obverse bears in relief the bust of Sir Edward and the reverse carries a dedicatory inscription.——Dr. W. H. Hamer, health officer for the County of London, has been knighted by the king of England.——Major A. M. Dicken has been appointed principal of the Medical School of Armritsar, India.——Dr. E. E. Wynne, health officer of Sheffield, England, was the winner of the 100 guinea prize offered by the London *Daily News* for the best essay on the problem of male infant mortality.——The local medical society of Dresden recently held a gala meeting in honor of the eightieth birthday of its honorary member, the pediatrician Prof. O. Heubner of the University of Berlin.——Dr. Lydia Rabinowitsch-Kempner has been granted 50,000 marks by the Prussian ministry of public instruction to continue her research on tuberculosis.——Dr. Massip Budesca of Madrid was recently presented with an engraved silver tablet in tribute to his zeal on behalf of the organization of the physicians of the civil service.——The physicians of the League of Nations, as the Italians call the visiting group of public health officials, recently visited the Clinic for Occupational Diseases at Milan, in charge of Professor Devoto.

Deaths in Other Countries

Dr. **H. F. Sadler** at St. Luke's Hospital, Sydney, Australia, from epidemic (lethargic) encephalitis.——Dr. **Andrew Deane**, lieutenant-colonel Indian Medical Service; for nineteen years superintendent of the Royal Victoria Hospital, Belfast.——Dr. **H. Rainy**, lecturer on the principles and practice of medicine at the University of Edinburgh; vice president of the Royal College of Physicians of Edinburgh and examiner in medicine at the University of Aberdeen; January 4, aged 59. Dr. Rainy was joint author with Dr. R. Hutchinson of "Clinical Methods."——Dr. **D. G. Thomson**, president of the Medico-Psychological Association; in Norwich, England, aged 66.——Dr. **Alfred M. Williamson**, health officer of the city of Edinburgh, Scotland.——Dr. **Nuno de Andrade**, formerly professor of hygiene and then of clinical medicine at Rio de Janeiro, a brilliant writer for the medical and lay press through several generations, director-general of the public health service in 1897 and member of the cabinet.——Dr. **J. Braquehaye**, surgeon in chief of the French Hospital in Tunis, a notable figure in the French colony. He was formerly professor of surgery at Bordeaux.——Dr. **K. B. Hofmann**, formerly professor of medical chemistry at Graz, noted for his research on the chemistry of the urine.——Dr. **K. Alt** of Magdeburg.——Dr. **J. Grinda Forner**, professor emeritus of clinical medicine at the University of Madrid.——Dr. **E. Ficalbi**, director of the zoologic anatomy institute at the University of Pisa.

CORRECTION

Federation of American Societies for Experimental Biology.—In the item published under the foregoing head (THE JOURNAL, Jan. 20, 1923), it should have been stated that Prof. A. J. Carlson, University of Chicago, was elected president of the American Physiological Society, C. W. Green, Missouri, reelected secretary, and Drs. John R. Murlin, Rochester, N. Y., and Arno B. Luckhardt, University of Chicago, elected to the council. There is no council of the federation.

Government Services

Navy Department Reorganizing Base Hospitals

The Bureau of Medicine and Surgery, Navy Department, is in process of reorganizing the Navy base hospitals. Units have been organized at Los Angeles, Seattle and Toledo. Units will be organized in other cities from time to time. Numerous physicians and dentists have been nominated for enrolment in the Naval Reserve Force, Class Six, in these cities.

Medical Supplies for Army

The annual supply bill carrying appropriations for the War Department contains many items relating to medicine and the health of the personnel of the Army and the public in general. Among other moneys appropriated in this bill are the following:

Reserve Officers' Training Corps, $3,250,000.
Civilian military training camps, $2,000,000.
Pay and allowances of contract surgeons, $41,000.
Pay of nurses, $650,000.
Construction and repair of hospitals, $497,000.
Quarters of hospital stewards, $10,000.
Medical and hospital department, $975,000.
Hospitals care, Canal Zone garrisons, $40,000.
Army Medical Museum, $7,500.
Library of Surgeon-General, $15,000.
Office of Surgeon-General, $215,000.
National Home for Disabled Volunteer Soldiers, $4,354,000.
Artificial limbs, $95,500.
Medical and Surgical History of World War, $16,600.

United States Veterans' Bureau News

Dr. Arthur E. Brides, director of the New England branch of the U. S. Veterans' Bureau, Boston, has resigned. Col. John F. J. Herbert has been named acting district manager until further notice. Capt. William J. Blake, chief administrative officer, is relieved from further duty and is ordered to report to Washington, D. C. He is succeeded by Capt. Malcolm L. Stoddard of Portland, Me. Dr. Winthrop Adams, Cambridge, Mass., has succeeded Dr. David J. Flanagan, who was relieved from duty as district medical chief. Fred T. A. MacLeod, chief of the rehabilitation division, is relieved from further duty and is ordered to report to Washington.

Prohibition Commissioner Issues Statement on Prescriptions in Influenza

Acting Prohibition Director J. E. Jones announced that there was no foundation for the reports published that all prohibition state agents would be authorized to take off the limit on prescriptions for liquor, if the influenza epidemic continued to become more virulent. Mr. Jones states that the department is meeting this situation by authorizing an additional supply of liquor to communities which require it. This is done on the statement of state or local health officials. On presenting proper evidence, any individual physician can obtain an extra book of prescriptions. Each case is acted on by the state prohibition officer, and no blanket orders are contemplated at Washington.

Narcotic Division Appeals for Increased Appropriation

Citing an amazing increase in drug law violations, the narcotic division of the Treasury Department has appealed to Secretary of Treasury Mellon for a larger force of field agents adequately to enforce the law. The report of the drug bureau to Secretary Mellon reads as follows:

During the fiscal year 1921-22, the number of arrests for the illegal use and sale of drugs increased 65 per cent. over the figures for the previous fiscal year. The number of convictions in the same period increased 100 per cent. The great increase in the number of arrests is partly attributable to the better organized force of field agents, but, of course, the arrests could not be made if the habit of drug addiction was not dangerously prevalent. The force of men engaged in this work is altogether too small to do the job well. In most of the states we have only one or two men, who are expected to cover the state thoroughly. It is obvious that they cannot do much along the border and seaport states, where smuggling is being carried on on such a great scale. Drugs may be more easily smuggled than whisky, and it is extremely difficult to prevent it unless there is a larger force of men on hand. We should be promptly advised when a shipment of drugs is admitted to this country so that our agents may be sure that it does not fall into the wrong hands. The customs service can give us this information and greatly facilitate our work. It would also be most helpful if physicians could be cautioned against giving a patient the first opiate to relieve sufferings as this is the way most addicts begin.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 8, 1923.

Prevention of Trypanosomiasis by Altering Vegetation

One learns from a valuable official publication, *The Kew Bulletin of Miscellaneous Information,* a project to prevent the propagation of tsetse flies by cultivating a plant which should prove a useful tropical fodder, the Efwatakala grass (*Melinis minutiflora*) found growing in Angola by Mr. M. T. Dawe in 1921. It grows with other and coarser grasses in virgin country, but on abandoned farm land or newly cleared areas it spreads rapidly almost to the exclusion of other kinds of vegetation. From October to May, it forms an excellent pasture, and even in the dry season retains its verdure when other grasses dry up. It has a strong odor, which is distasteful to tsetse flies. Researchers at Kew show that the odor is due to an aromatic oil secreted in minute drops by glandular hairs on the stems and blades. The natives of the Portuguese Congo make use of its insectifugal qualities in constructing nests for their sitting fowls, and litters for dogs. It is also found in South America, where it is known as stink grass. It is being cultivated at Kew, and seeds are being sent to Nigeria and Uganda. Against the tsetse fly, which in these regions is the carrier of the trypanosome of sleeping sickness and of nagana, a disease of wild and domesticated animals, various measures have been proposed. One was the extermination of the magnificent wild game of Africa, followed by the killing off of water fowl and crocodiles. Another was the segregation of the natives. The new scheme may render such proposals unnecessary, and allow large districts, now almost useless, to come under cultivation. The tsetse flies are creatures of the lakeside and the thick bush that grows there. They seldom leave their shady haunts or fly far except when following man or animals. A clearing 50 yards wide has been found a great protection, and every addition to it increases the safety. But clearings are not easy to keep open in the tropics. Efwatakala grass is said to flourish on exactly such clearings, choking the regrowth of bush. The fodder is so good that it will soon repay the cost of clearing.

Centenary of the Lancet

With pardonable pride, the *Lancet* announces that in this year it will complete its centenary. The first number appeared, Oct. 5, 1823, when the founder, Thomas Wakley, a reformer of the radical school of those days, announced his intention to produce a work that would convey to the public and to distant practitioners, as well as to students in medicine and surgery, reports of the metropolitan hospital lectures, and, secondly, give a correct description of all the important cases that might occur, whether in England or on any part of the civilized continent. He added: "Our columns will not be restricted to medical intelligence, but, on the contrary, we shall be indefatigable in our exertions to render the *Lancet* a complete chronicle of current literature." This project is extraordinary, for he had only thirty-six small octavo pages in his earlier numbers. His successor of today explains it by "the audacity of youth," for Wakley was then only 28. The other part of the program now seems quite ordinary, but only because the example set by Wakley has been followed by the medical journals of this and other countries. He was a great pioneer and a doughty fighter, who rejoiced in conflict. The reporting of hospital lectures was regarded, strange as it may seem, as most objectionable innovation, and was strongly resisted by the lecturers.

The destruction of nepotism in hospital appointments was another of Wakley's aims. He succeeded all along the line; abuses withered under his fierce strictures. But in his campaign he indulged in personalities to an extent which today we would consider outrageous even in the lay press. In one of his excursions into general politics, he described the younger Pitt as "an official coxcomb, regardless of everything but the gratification of his own senseless, remorseless, and petty ambition." But such methods must be judged by the standard of his age. He ranks as the first and the greatest medical reformer. His successors have continued the campaign of reform in many directions—the analysis of quack medicines, the detection of food adulteration, the improvement of workhouse infirmaries, and the insistence on medical evidence at coroners' inquests.

Books on the Prevention of Venereal Disease Banned in New Zealand

In a letter to the daily press, Sir G. Archdall Reid, the writer on heredity, calls attention to the banning of books on the prevention of venereal disease in New Zealand. His book on the subject, as well as that by Miss Ettie Rout, entitled "Safe Marriage," is banned. No bookseller will stock the former unless he has a guarantee from a local physician. Sir Archdall Reid points out that formerly all disease, especially when widespread, was regarded as a manifestation of divine wrath, to be combated by prayers and offerings. Attention was thus diverted from sanitation. These ideas, though evidently still current in New Zealand and Africa, are being abandoned in civilized states. They linger among certain classes in England, but are being much less confidently expressed than formerly. It is generally becoming recognized that the desire to prevent sin is one thing; a desire to secure the poisoning of the sinner quite another. Often those who suffer have not sinned at all—witness the thousands of women and children suffering from venereal diseases. Further, the zeal of the virtuous slumbers profoundly unless some one tries to prevent venereal disease. Then their zeal flames into passion, and passion is translated into action by banning such books as those mentioned.

The Centenary of Jenner

On the 28th of this month, we should be commemorating the centenary of the death of Jenner and, strange to say, just after a smallpox outbreak. As the antivaccinationists are still with us, the figures showing the decline of smallpox in successive decades during the period of general vaccination may be given:

1867-1876	58,614 deaths
1877-1886	18,026 deaths
1887-1896	4,892 deaths
1897-1906	4,763 deaths
1907-1916	139 deaths

Insurance Against Penalties for Refusing to Violate Professional Secrecy

The unsatisfactory law of this country which does not respect professional secrecy has been referred to from time to time in these letters. Underwriters at "Lloyds" have decided to offer policies covering losses that may be incurred if a physician is sent to prison for contempt of court because he refuses to disclose matters confided to him in his professional work. The premiums are: limit of loss not exceeding $100 a week, $5; not exceeding $150 a week, $6.25; not exceeding $200 a week, $7.50; not exceeding $250 a week, $7.50. The payments to the insured are limited to fifty-two weeks.

Insurance Physicians Remove Telephones

One of the defects of the National Health Insurance Act is that, as patients pay by a capitation fee, whether they do or do not choose to obtain medical advice makes no difference in their expense, and there is no check on calling in the physician for very trivial complaints. The physicians in Coalville, a town of 20,000 population in Leicestershire, have found the calls for trifling matters such a nuisance that they have had the telephones removed from their offices and residences. The Coalville Friendly Societies' Council, representing 7,000 members, has made a protest, contending that absence of telephonic communications may prolong patients' sufferings. The Insurance Committee has decided to inform the physicians that the removal of the telephones tends to a less effective medical service than is desired.

PARIS

(From Our Regular Correspondent)

Jan. 5, 1923.

Professorial Chairs in the Universities

The minister of public instruction recently pointed out to the rectors of the universities the disadvantages that arise from making too many changes in the faculties, whereby professorial chairs that may be regarded as essential are at times caused to disappear completely. The minister stated that he recognized the difficulty that had often to be faced when it seemed desirable to bestow worthy titles on eminent teachers, either owing to the fact that no suitable chair becomes available in their own faculty or because their specialty covers too narrow a field for them to procure a chair easily. He proposed that two kinds of professorial chairs be established: (1) the chairs which must be considered fundamental and which must be maintained without transformations within the faculty; (2) appointive chairs. The latter could be abolished or transformed in any manner that seemed desirable when relinquished by their incumbents, and might even be shifted from one faculty to another. They would be, in a certain measure, the reward for outstanding work in some particular field, or would provide for those deserving advancement. As regards rights, privileges, salary and advancement, there would be no difference between the two kinds of chairs.

It has also been suggested that it might be advisable to establish certain chairs that would not be regarded as belonging to any faculty in particular. Such a plan, in spite of the difficulties that its realization seemed to imply, might be worthy of consideration, as the interests of general instruction, especially in the matter of research, might thus be promoted and an unusual liberty of movement be accorded.

Resumption of Scientific Relations with Austria

The request of the French minister to Austria, made to the medical "bloc" in parliament, to bring about the resumption of scientific relations between French physicians and surgeons and their Austrian and Hungarian confrères, was supported by Pinard both from the scientific and the diplomatic point of view. The speakers who took part in the discussion were of the opinion that it is not advisable to erect an impassable barrier between nations and especially between men of science, and that the suggestion of the French minister to Austria should therefore be given the most careful consideration.

Counterfeited Medical Prescriptions

Dr. H. Luys gives in the *Concours médical* an account of counterfeited medical prescriptions which concerned him directly. His name, address and telephone connection were correct, but the days and hours designated for office consultation were incorrect. The prescription called for a heroin formula that he never prescribed, and the signature was quite unlike his own. Dr. Luys learned later that the lady

who had forged his name was an old acquaintance who for years had been a heroin addict. Dr. Luys proposes, as a remedy, the following measures: 1. Printers should be prohibited from printing medical prescription blanks for any party unless they are sure of his identity and know that he is a bona fide doctor of medicine. 2. Prescription blanks should have at the bottom the name of the printer. 3. Every authorized general practitioner should be provided with a stamp for the purpose of authenticating his signature with a seal. Such stamps should be made and delivered by engravers only to such persons as are entitled to use them, the same control being exercised as in the case of prescription blanks.

An Ovation to Professor Arnozan

On the occasion of the last lecture of Dr. Arnozan, professor of clinical medicine at the Faculté de médecine of Bordeaux, who is about to retire from active service, the pupils and friends of the professor presented him with a bronze plaque bearing his likeness.

Importation of Smallpox Vaccine

The *Journal officiel* published recently an order of the president of the republic to the effect that every shipment or entry of foreign smallpox vaccine into France must be accompanied by a declaration, to be filed with the Institut supérieur de vaccine of the Academy of Medicine at Paris, concerning the origin, the nature and the quality of the vaccine to be introduced, together with the address in France of the agent handling the vaccine. Every tube of the vaccine imported must give the address of the sender and the address of the recipient, together with the last date on which the vaccine may be used (thirty days from the date of manufacture). Furthermore, the depositories of foreign vaccines in France are subject to the authorization and the supervision of public authority, in accordance with the rulings laid down by the minister of public health.

The Bulletin of the Friends of Hygiene

The Société des amis de l'hygiène, founded recently for the purpose of promoting the progress of public health in France and in the colonies, has just published the first number of its monthly bulletin, which is intended to serve as a means of communication and as a connecting link between the members of the association.

BUCHAREST

(From Our Regular Correspondent)

Dec. 27, 1922.

Anthrax Among Animals

Owing to the uncommon drought last summer, and to the consequent insufficient feeding of animals, the number of cases of anthrax is much greater than in corresponding periods of other years. In some parts of the country there was absolutely no grass or water. If the animals did not die of thirst, their resistance was so reduced that they readily developed diseases, of which the most prevalent was and is also at present anthrax. According to Roumanian sanitary law, animals suffering from anthrax must not be treated at all, but immediately slaughtered and buried; but the peasants, in order to decrease their losses, take off the hide of the animals, for which they get almost as much as for the animal itself. Many recent cases of anthrax have resulted from this practice. Severe penalties have now been instituted for the infringement of these laws. Luckily, the number of human patients suffering from anthrax is relatively low, and those who become infected with anthrax are instructed to seek at once medical aid, which, thanks to the reliable anthrax serums distributed to physicians by the state, saves the majority of patients.

Unreliability of a Negative Wassermann Reaction

Dr. Franz Veress, professor of venereology at the University of Cluj, says that most unfortunate consequences attend the practice of attaching importance to a negative serum reaction. It is still worse if a patient goes directly to a laboratory and not to a specialist. Basing his statement on details of several thousand cases, he asserts that a positive reaction is the sign of active syphilis; necessitating energetic treatment, but he is emphatic in warning against the drastic treatment of old latent cases of syphilis, in which reaction should be gradually induced by means of mild treatment with mercury or iodin. A negative Wassermann reaction alone means nothing at all—the disease may be either nonexistent or latent. The reaction can be negative in all stages of syphilis, whether mild or severe. In the estimation of cures, clinical symptoms are to be relied on but not the negative Wassermann reaction. It may be necessary to give a course of treatment even when the reaction is negative.

Treatment of Sleeplessness

Dr. Cajal of Bucharest, in dealing with the treatment of sleeplessness, points out that a number of patients consult their medical advisers on account of "sleeplessness"; but on closer investigation it appears that the symptoms which lead them to seek treatment is a limitation of the duration of sleep and the fact that they are unrefreshed in the morning. Simple disturbances of sleep seldom occur unless associated with some body disturbance, either past or present. In a few cases the disturbance is periodic and is a kind of psychotic affection. It should be the duty of the practitioner to discover the other symptoms with which the sleep disturbance is connected. It is common for nervous children to sleep badly. The exciting causes may be some extraordinary excitement, bodily exertion, or tiring and emotional causes. The treatment of severe cases of this kind should be directed to strengthening the nervous system and regulating the hygienic conditions of life. Psychic influences from the parents and the physician do much good, but care must be exercised that neither severe unkind treatment, nor exaggerated mildness be employed. Narcotics are rarely needed. The possibility of worms must be borne in mind in these cases. The disturbance in adults may be secondary to affections of the lungs, heart or skin, or there may be a painful nervous disease, such as neuralgia, neuritis, tabes or cerebral syphilis. At times, organic diseases of the nervous system are manifested only by disturbance of sleep at first. It is not uncommon for a patient with general paralysis to come to the medical practitioner on account of this symptom. The next category of cases belongs to the poisonings. Chronic alcoholism, nicotin poisoning, intoxication with tea and coffee and the like may be responsible for the disturbance, and Dr. E. Meyer of Germany stated some years ago that sleeplessness may arise in the course of morphinism. The disturbance of sleep in marked mental disturbances is well known. In functional neuroses, such as hysteria and neurasthenia, sleeplessness is not infrequently encountered. The type of the disturbance in these cases is very definite. Finally, he mentions the sleeplessness of the climacteric. The treatment of the symptoms must consist, first of all, in the treatment of the primary condition causing it. In the second place, much good can be done by paying attention to the hygiene of sleep and of the bedroom. The physician may be able by simple means to remove the symptom altogether in nervous patients. Next, hydrotherapeutic measures may be adopted. Wet compresses, packs and partial baths are useful. Baths often work well in the sleeplessness of the climacteric. Hypnosis is often an excellent soporific, but as a rule the practitioner is not experienced in this. Electrotherapeutic measures may

do good. Before giving hypnotics or narcotics, the physician should remember that he is merely dealing with a symptom; at times, however, it is impossible to get on without them.

VIENNA

(From Our Regular Correspondent)

Dec. 28, 1922.

Dismissal of Medical Officers of the Hospital Staffs

In view of the financial stress in the new era of the republic, which necessitates a sharp reduction of all expenditures incurred by the state, the hospitals also will be considerably affected by the activities of the "economy dictator," appointed by the League of Nations. In Vienna alone, two hospitals will be closed, and the others will undergo a marked diminution of capacity. At least 75 per cent. of the nurses and attendants will thus be superfluous, to say nothing of the administrative staff. The medical staff of these hospitals has already been cut down, as more than 100 physicians have received a fortnight's notice that their appointments, terminating December 31, will not be renewed. While the officials and attending personnel are fighting against this sudden dismissal, backed by their political organizations, the physicians have no political party behind them. In vain, the medical organization has pointed out to the ministry of finance that a real "cut" in the administrative body and the number of nurses is necessary and possible, while the number of physicians is even now insufficient, and a diminution of their number is wrought with harm and danger to the patients. The view of the ministry is that, since a number of beds (about 25 per cent.) are continually not in use, a uniform dismissal from all classes of persons salaried by the hospitals is required and possible.

The situation of these physicians in the capital is most distressing. They are unable to establish themselves in private practice, as this now involves an expenditure of many millions of kronen; and, worse still, they cannot find flats or lodgings for that purpose, as the housing problem is a great problem in this city. The ministry is not opposed to continuation of the work by the physicians if they will consent to work without being paid, but the salaried appointments were for the most part the only means enabling the young physician to keep up his studies and obtain the knowledge and practical experience required by him in his future position as a member of the corporation of public health. As nearly 80 per cent. of all hospitals in this country are owned and run by the government, the openings in the private hospitals and nursing homes are few. The average number of inmates of public hospitals has grown less every year since 1919, partly because the charges are so high and partly because the institutions were built to accommodate the population of a large empire (55,000,000), and the population is now only 6,000,000. The situation is unavoidable as far as the state is concerned; but as regards the profession it is a dangerous procedure for the present government not to individualize the acts of economy.

Difficulties of the Anatomic Institute

The Anatomic Institute of the Vienna University, whose world-wide reputation has every year attracted hundreds of students from all parts of the world, has been forced to diminish its work to a considerable extent. The yearly grant by the government is hardly sufficient for minor administrative expenditure, and all other expenses must be covered either by the students' fees or by grants and contributions from other sources (Rockefeller Foundation, Swiss Aid). These contributions from abroad include the necessary apparatus and a full outfit of linen for working purposes, and equipment for the library, as well as chemicals for the laboratories. But bodies, which are one of the chief requirements of an anatomic institute cannot be obtained by money. While in former years the vaults of the institute held sufficient anatomic material for at least two years, there is now a distinct scarcity. The public hospitals can supply only such bodies as are not claimed. Previously, more than 200 bodies were prepared in the laboratories each year by injection of phenol (carbolic acid), and were kept in this liquid until wanted for use. Now scarcely fifty can be counted on, while at least seventy or eighty whole cadavers are required for the work of the inland students alone.

There are more than 700 students working in each of the two institutes, of whom more than 60 per cent. are foreigners, chiefly from the Balkans, but also from the United States. In order to utilize the small number of cadavers to the utmost it has been arranged that only inlanders work on the whole body (six at a time) while foreign students dissect only separate parts; and only a limited number of students of the first year (400) are admitted. There are three dissecting theaters, with eight dissecting tables in each. The fees for the work in the institutes are about 60,000 kronen for each term (less than $1) for the inland student, while foreigners have to pay ten times as much. Still, these sums do not suffice to pay expenses. The institute requires more than half a ton of raw phenol alone every year, costing about $400, to say nothing of fuel and lighting.

In order to obtain more working material, arrangements have been made with the hospitals in the country and the provinces that will insure a supply of from twenty to thirty bodies each year. But the transportation of this material will be so expensive that special fees will have to be charged for the dissection of bodies obtained in this way. These will of course be obtained from the foreign students, of whom there are at present here sixteen Egyptians, eight Chinese and Japanese, and one Hindu, a woman.

Opening of a Crematorium in Vienna

An old prejudice was done away with a few days ago in this city by the present democratic government, and now the body of any person who desired to be cremated need not be transported to Germany, formerly the only way to have this wish fulfilled. The government, being under ecclesiastic control, tried, to the very last moment, to prevent the opening of the crematorium, which had been erected at a great cost by the municipality. But the magistrates refused to consider the governmental order, and there is little doubt that the final decision of the upper court of administration will be in favor of cremation. From the medical point of view, cremation is preferable to interment, except that detection of a criminal death is made most difficult by it. The furnaces of the crematorium are regulated in such a way that about 750 kg. of coal are required to reduce the body to ashes within two hours. In case of death from infectious disease, and in any case when cemeteries are situated near drinking wells, cremation should be the method of choice for the disposal of dead bodies, as was the practice during the war.

It is expected that the existence of this institute in the capital will give a strong impetus to a more general adoption of cremation in this country.

Report of the Work Done by the Municipal Board of Health

Professor Tandler, at present head of the board of health of Vienna, recently reported the work done by the board last year, in a long speech on the budget. The expenditures were high, about one billion kronen ($79,000) a day, an enormous sum for our city. The principal idea was to diminish the unproductive expenditures and to increase the

productive ones. In other words, it was the duty of society to save the poor from the poorhouse, not to erect beautiful poorhouses for them. This was effected by procuring work for the unemployed, by encouraging mothers to take their children out of the children's homes, by establishing homes for aged people, where they could improve their situation by doing light work. Some statistics were worth recording. In the first eleven months of the year 1922, Vienna had 27,185 live births as against 26,134 deaths, or a gain of only 1,050, a poor outlook for the future. More than 60,000 aged persons were recipient of monthly grants enabling them to stay with their family instead of seeking help in the poörhouse. The expenditures for the inmates of the asylums for the insane were enormous. The poor inmates, especially those who are subjects of the successory states, were a source of heavy burdens to Vienna. They cost more than three billion kronen per year and could not be got rid of, as their countries refused to take them over or to pay for them.

In cooperation with the housing office, energetic efforts had been made to meet the housing problem; 370 cottages and 1,470 flats, mostly for the working classes, had been erected and slums pulled down, within one year. More than 42,000 persons were still looking for lodgings, while 600 families were threatened with a collapse of the houses they live in. Great care was taken to obtain playgrounds for schoolchildren, and every kind of sport and athletics was encouraged. Swimming in the municipal baths was made possible for schoolchildren; even in winter, by a generous coal supply. A number of old cemeteries were closed and will be converted into public gardens, while an important item in the work was the final replacing of the oldfashioned dust-van, a potent source of infection, by a modern refuse collector, dustproof and hygienic. A reform in the old slaughter houses was being instituted, and an up-to-date system of meat inspection and market control aided in keeping down infectious outbreaks.

BERLIN

(From Our Regular Correspondent)

Jan. 6, 1923.

Rules as Affecting Medical Directors of Hospitals

A committee of the Prussian *Aerztekammern* ("chambers of physicians") has drawn up a set of rules applicable to medical directors of hospitals: 1. The medical director of a hospital should be by contract engaged for a period of at least five years. The contract may not be dissolved, nor may a renewal be refused, except for important reasons. If differences of opinion arise as to whether such reasons exist, the matter will be decided either by arbitrators or by the ordinary courts of justice. 2. In case the medical director is not the executive head of the institution, he is at least responsible for its management so far as the care of patients is concerned, and more particularly for the general medical service rendered to patients and for the hygienic measures to be applied. In this connection, he must be accorded the necessary authority. 3. If the institution has a board of trustees (administrative board or committee), the medical director (or his locum tenens) should have a seat and vote at its deliberations. 4. In all questions pertaining to medicine, hygiene and building arrangements, the opinions of the medical director must be heard before any final action is taken. He should also assist in the administration of the institution. 5. The medical director is ex officio the head not only of the medical personnel and the nursing personnel, but also of the household personnel and the administrative personnel, in all matters pertaining to the care of patients. 6. All rules and regulations adopted by a board of trustees (administrative board or committee) with respect to the hospital personnel, in connection with the care of patients, must pass through the hands of the medical director, and their execution remains subject to his supervision. Likewise, all other documents, orders and reports affecting the hygiene of the hospital or the care of patients, which are sent to the board of trustees or which are issued by it, must be brought to the notice of the medical director or presented for the addition of his signature, as the case may be. 7. The medical director has the right to demand that he be allowed sufficient medical assistants for the performance of his tasks, such as anesthesia, assistance at operations, locum-tenency and operations by specialists. The engaging of medical assistants in a hospital lies in the hands of the administration or the board of trustees, in accordance with the recommendations of the medical director or of the independent chief physician of a special service. Such assistants are then subject, as to their service, to the orders of the chief physician of the department to which they were delegated. 8. The medical director must also control the distribution of the medical assistants and the attending personnel throughout the various departments, and likewise the activities of this personnel. In case the rules of a cloister or of a foundation give the lady superior the authority to assign the nurses or transfer them to other services, it should be understood that the lady superior before taking such action should come to some agreement with the medical director. 9. Before a new patient is admitted, the sanction of the medical director should be secured. The medical director must decide to what ward or room a patient is to be assigned, and also in regard to the dismissal of a patient. No patient may be dismissed without the consent of the medical director—not even for disciplinary reasons. 10. The medical director should receive an adequate fixed salary, which, if it is the physician's chief source of income, should increase with length of service and should be subject to a pension. Any other compensation will be in accordance with special agreements, as expressed in the contract. While the fundamental principles as here laid down apply more particularly to medical directors of hospitals, they are, in a measure, applicable also to the chief physicians of departments or special services.

Personal

Trendelenburg of Tübingen has refused the call to Berlin to serve as the successor of Rubner for the chair of physiology. A call has been sent to F. Hofmann of Bonn.

Professor Poll of Berlin has secured a chair for general biology and theory of heredity.

Marriages

EUGENE JOHN TRUSCHEL, Pittsburgh, to Miss Helen Mildred Rupp of Edgewood, Pa., November 23, at Wilkinsburg.

ARTHUR W. M. ELLIS, Toronto, Canada, to Miss Winifred Rose of Essex, England, recently, in England.

RODERICK JAMES MCDONALD, JR., Loveland, Colo., to Miss Hazel Dell Chaffee of Boulder, December 28.

JAMES H. HOWELL, Galt, Ont., Canada, to Miss Lillie Murray of Kingston, Ont., recently.

THOMAS W. BALLANTYNE to Miss Marion Karn, both of Woodstock, Ont., Canada, recently.

OLIVER H. SWARTZ, Middletown, Pa., to Miss Mary Frances Moore of Harrisburg, December 2.

EDWARD W. JEW, Pittsburgh, to Miss Elsie M. Seeman of Wilkinsburg, Pa., November 30.

WILLIAM A. CARDWELL to Miss Jessie Lord, both of Niagara Falls, Ont., Canada, recently.

FRANK E. SEYMOUR to Miss Olga Larson, both of Fort Dodge, Iowa, November 28.

EDWIN J. BARNETT to Miss Agnes O'Neil, both of Spokane, Wash., November 21.

Deaths

Walter Stanley Haines ⊕ beloved teacher of students of Rush Medical College since 1876, died, January 27, at the Presbyterian Hospital from bronchiectasis complicated with chronic nephritis. Dr. Haines was born Sept. 27, 1850, in Chicago. His father, John G. Haines, was for two terms mayor of the city. Dr. Haines attended the Chicago High School, graduating first in his class, and then attended the Massachusetts Institute of Technology from 1869 to 1871. While there he fell ill with pleurisy and was compelled to give up his work; since then he suffered constantly with a lung disturbance. In 1871 Dr. Haines entered the Chicago Medical College, from which he graduated in 1873. Even before his graduation he showed great promise in his chosen field, and was offered the chair of chemistry in his Alma Mater while still a student, holding the position from 1872 to 1876. During this period, having completed his medical education, he served an internship in Mercy Hospital and spent several months in Europe in study. In 1876 he was called to the chair of chemistry in Rush Medical College, succeeding Dr. Henry L. Lyman. Since that time Dr. Haines had devoted himself to teaching and there passed before him a vast body of students who not only respected him for his scientific attainments but loved him greatly for the beauty of his personal character. It has been said of him that his gentle spirit, his standards of care and accuracy, his consideration for his fellow men, whether colleagues, students or janitors, made him, not only the best loved man in the college, but a constant beneficent influence on the whole place.

Dr. Haines was a member of the committee of revision of the United States Pharmacopeia from 1900 to 1920. He was a member of the Illinois State Food Standard Commission since 1909, and was a member of the American Chemical Society and of the Chemical Society of London. He contributed widely to the literature of his subject. With Peterson of New York he prepared a textbook of legal medicine and toxicology which passed through several editions; he also wrote chapters on special toxicologic subjects in various systems of toxicology and legal medicine. He was especially noted for his service as expert witness in many important legal cases, in which his calm demeanor, dignity, incisiveness and broad information commanded wide admiration.

In 1916, the alumni of Rush Medical College joined in the raising of a fund for presentation to the college of a portrait of Dr. Haines, and for establishment of a Haines fund for the college. Last year, in recognition of his fifty years of service in the teaching of medicine, the alumni presented him with a watch; the graduating class placed a tablet in his honor in the college amphitheater, and the Walter S. Haines Library fund was established for the library of Rush Medical College, to which he had given greatly of his service. In concluding his address on that occasion, he said:

> It is for my students, however, that is reserved the warmest place in my heart and the largest measure of my thought. I have seen more than 6,500 of them go forth to every state of this nation, to nearly every town of the land, and to almost every country of the globe, to give comfort to the sick and to stay the hand of the fell destroyer—to teach, to investigate, and to make great discoveries. My one fondest hope is that perhaps I have done a little to prepare them for that work and that possibly I have helped them, even though slightly, in their splendid careers.

John Henry Larkin, New York; Medical Department of Columbia College, New York, 1894; member of the American Association of Pathology and Bacteriology, the New York Pathological Society and the New York Academy of Medicine; assistant professor of pathology at his alma mater; consulting pathologist to St. Francis', St. Joseph's, Misericordia, Sydenham, Lincoln and Harlem hospitals; since 1911 director of the pathologic laboratories of the City Hospital, Welfare Island; aged 53; died, January 17, from pneumonia.

Franklin Deuel Skeel, New York; New York University Medical College, New York, 1881; member of the New York Academy of Sciences, the New York Academy of Medicine, the New York Ophthalmological Society, the New York Zoological Society, the New York Botanical Society, the American Association for the Advancement of Science, the American Museum of Natural History, and formerly president of the New York Microscopical Society; aged 71; died, January 15, at his home in Bedford Hills.

John Williamson Caldwell, New Orleans; Medical College of Virginia, Richmond, 1864; Civil War veteran; Stewart professor of natural sciences, Stewart College (Southwestern Presbyterian University), Clarksville, Tenn.; emeritus professor of chemistry and geology at Tulane University of Louisiana School of Medicine, and formerly curator of the college museum; aged 80; died, January 2, from senility.

Henry H. Flood, Catonsville, Md.; Baltimore University School of Medicine, Baltimore, 1896; member of the Medical and Chirurgical Faculty of Maryland; for nearly thirty years port medical attendant to the Norwegian, Swedish and Danish vessels under the maritime regulations of those countries; aged 50; died suddenly, December 14, at the St. Agnes Hospital, Baltimore.

William Jordan Taylor ⊕ Cincinnati; Miami Medical College, Cincinnati, 1900; formerly lecturer on electrotherapeutics at his alma mater; member of the Cincinnati Academy of Medicine; the Cincinnati Society for Medical Research, and the American Roentgen Ray Society; served in the M. C., U. S. Army, during the World War; aged 48; died, January 13.

Frederic Albert Jewett ⊕ Brooklyn; Long Island College Hospital, Brooklyn, 1883; member of the Brooklyn Pathological Society; for more than twenty years connected with the board of health, and chief inspector of the Bureau of Contagious Diseases; formerly on the staff of the Bushwick Hospital; aged 70; died, January 18, from cardiac dilatation.

Edouard Julien Dubois ⊕ Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1905; member of the Society of American Bacteriologists; served in the M. C., U. S. Army, during the World War; for twelve years city bacteriologist; aged 55; died suddenly in his office at the U. S. Veterans' Bureau, January 17, from cardiac asthma.

Andrew David Nesbit ⊕ Tekamah, Neb.; Jefferson Medical College of Philadelphia, 1887; formerly president of the Nebraska State Medical Association; member of Missouri Valley Medical Association; at one time county coroner; member of the board of education; aged 62; died, January 13, from cerebral hemorrhage.

Langley St. A. Whitley ⊕ Godfrey, Ill.; St. Louis Medical College, St. Louis, 1884; was given the degree of LL.D. from the University of Virginia, Richmond; formerly member of the state legislature; aged 59; died, January 15, following an operation for carcinoma of the stomach.

Arthur Bernheim Prince, Kingsland, Ga.; University of Georgia Medical Department, Augusta, 1912; served in the M. C., U. S. Army, during the World War, with the rank of captain; aged 34; died, December 25, from a bullet wound in the brain, presumably self-inflicted.

Edgar Clarence Taylor, Pretty Prairie, Kan.; University Medical College of Kansas City, Mo., 1909; member of the Kansas Medical Society; served in the M. C., U. S. Army, during the World War, with the rank of captain; aged 46; died, December 28, from tuberculosis.

Milton C. Wilson, Lafayette, Ind.; Medical Department Butler University, Indianapolis, 1882; member of the Indiana State Medical Association; county physician; formerly president of the Tippecanoe County Medical Society; aged 71; died, January 14, from heart disease.

William Scott Rofe, Denver; Rush Medical College, Chicago, 1874; formerly a practitioner of Chicago, where he served as chief surgeon of the stockyards; aged 80; died, January 12, from heart disease, subsequent to a fall, January 11, when he fractured his wrist.

Samuel Rufus Moyer ⊕ Monroe, Wis.; Chicago Medical College, Chicago, 1883; formerly lecturer on diagnosis at the Marquette University School of Medicine, Milwaukee; president of the Green County Medical Society; aged 68; died, January 15, from cholemia.

Enos Walter Dickson Wright, Langley, S. C.; Baltimore Medical College, 1894; aged 50; died, December 4, at the Margaret Wright Hospital, Augusta, Ga., from a fractured skull, received when the automobile in which he was driving was struck by a train.

John H. McCreary, Highland Park, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1866; Civil War veteran; formerly superintendent of the Pittston, Lancaster County, Harrisburg and Wernersville hospitals; aged 79; died, January 16.

John Bradner Cassady, Burlington, N. J.; Medico-Chirurgical College of Philadelphia, 1889; member of the Medical Society of New Jersey; president of the board of health; surgeon for the Pennsylvania Railroad; aged 56; died, November 29.

⊕ Indicates "Fellow" of the American Medical Association.

John H. Metzerott, Washington, D. C.; Medical Department of Columbian University, Washington, D. C., 1891; member of the Medical Society of the District of Columbia; aged 57; died, January 3, at the Sibley Memorial Hospital, following an operation.

Washington Franklin Elliott, Beaver Falls, Pa.; Jefferson Medical College of Philadelphia, 1887; member of the Medical Society of the State of Pennsylvania; chief of staff of the Providence Hospital; aged 66; died, January 10, from pneumonia.

Sylvester Gwaltney ✠ Los Angeles; Marion-Sims College of Medicine, St. Louis, 1892; formerly instructor of clinical medicine at the College of Physicians and Surgeons, Los Angeles; aged 58; died, January 2, in his office from heart disease.

Lloyd L. Hurst, Philadelphia; Jefferson Medical College of Philadelphia, 1921; served during the World War; on the staff of the Samaritan Hospital; aged 36; died, January 7, at Maple Shade, N. J., from influenza and pneumonia.

Willard George Steadman, Southington, Conn.; Bellevue Hospital Medical College, New York, 1874; member of the Connecticut State Medical Society; formerly city health officer; aged 69; died, January 10.

Otto Frenzel, Pigeon, Mich.; Starling Medical College, Columbus, Ohio, 1891; member of the Michigan State Medical Society; aged 52; died, January 6, at the Saginaw General Hospital, Saginaw.

James Crooks, Paterson, N. J.; New York Homeopathic Medical College and Hospital, New York, 1887; member of the Medical Society of New Jersey; aged 61; died, January 13, from heart disease.

Hugo A. Gabert, Mandeville, La.; Medical College of Louisiana, New Orleans, 1879; member of the Louisiana State Medical Society; aged 70; died suddenly, January 10, from heart disease.

Samuel M. Henry, Toronto, Ont., Canada; Victoria University Medical Department, Toronto, 1868; formerly mayor and chairman of the board of education of Harriston; aged 73; died recently.

Tilmon Leroy Noblitt, Erick, Okla.; Eclectic Medical University, Kansas City, Mo., 1902; member of the Oklahoma State Medical Association; also a minister; aged 49; died, December 22.

Florence Ellen De L'horbe McCormick, Toronto, Ont., Canada; American Medical Missionary College, Chicago, 1904; aged 40; died recently, from intestinal stasis and peritonitis.

John Howard Nixon, Springfield, Mo.; University of Pennsylvania School of Medicine, Philadelphia, 1888; member of the Missouri State Medical Association; aged 60; died, January 9.

William Thomas Duncan, Des Moines, Iowa; National Medical University, Chicago, 1895; Medical Department of Drake University, Des Moines, 1899; aged 47; died, January 13.

John A. Biles ✠ Del Norte, Colo.; College of Physicians and Surgeons, Keokuk, Iowa, 1877; formerly member of the state legislature; aged 70; died, January 9, following a long illness.

James Darrach, Philadelphia; Pennsylvania Medical College, Philadelphia, 1852; formerly consulting physician at the Germantown Hospital; aged 94; died, January 17, from senility.

Harley Jones Butte ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1900; aged 52; was found dead, January 12, from accidental asphyxiation.

Edward Maguire, Pullman, Wash.; Kansas City (Mo.) Medical College, 1900; served as mayor of Pullman for two terms; aged 52; died, January 2, from cerebral hemorrhage.

Samuel Joseph Smith, Iowa City; Iowa State University of Iowa College of Medicine, Iowa City, 1885; member of the Iowa State Medical Society; aged 63; died, January 11.

James Merit Melton ✠ Crozet, Va.; Vanderbilt University Medical Department, Nashville, Tenn., 1901; aged 51; was instantly killed in an automobile accident, January 10.

Omar E. Amos, Jefferson City, Mo.; American Medical College, St. Louis, 1904; member of the Missouri State Medical Association; was shot and killed, January 9.

Anna E. Rhoads, St. Louis (licensed, years of practice); formerly a practitioner of Indiana; aged 80; died, December 20, at the Christian Church Home, from senility.

Ayman E. Kean, St. Louis; St. Louis College of Physicians and Surgeons, 1903; also a dentist; aged 48; died, January 7, from injuries received in an automobile accident.

Frederick Raymond Kitterman, Tiskilwa, Ill.; Medical Department of the University of Illinois, Chicago, 1902; aged 47; died recently from pulmonary thrombosis.

Spotswood Hayes Parker, University, Va.; University of Virginia Department of Medicine, Charlottesville, 1904; aged 41; died, January 8, following a long illness.

Harvey Jenner Chadwick ✠ Grand Junction, Mich.; Michigan College of Medicine, Detroit, 1881; aged 65; died, November 5, from cerebral hemorrhage.

John Henry Long, Lincoln, Neb.; Minnesota Hospital College, Minneapolis, 1888; also a druggist; aged 68; died, January 11, at St. Elizabeth's Hospital.

George Allen McCormick, Hennepin, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1883; aged 76; died, January 5, from angina pectoris.

Anna Mary Morgan, Toledo, Ohio; Physio-Medical College of Indianapolis, 1898; aged 64; died, January 4, at the home of her son in Westville, N. J.

Orion Baum, Vine, Va.; College of Physicians and Surgeons, Baltimore, 1885; member of the Medical Society of Virginia; aged 64; died, January 9.

Frank P. Gray, Lafayette, Ind.; College of Physicians and Surgeons, Keokuk, Iowa, 1876; member of the city board of health; aged 65; died, January 18.

Prince Cooper, Van, W. Va.; College of Physicians and Surgeons, Baltimore, 1915; aged 36; died, December 7, at the county hospital, from meningitis.

Daniel Pool ✠ St. Paul; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1885; aged 66; died, January 4, following a long illness.

John L. Smith, Clarksburg, Ind.; Cincinnati College of Medicine and Surgery, Cincinnati, 1877; formerly postmaster; aged 70; died, January 15.

Arthur Howard Nichols ✠ Boston; Medical School of Harvard University, Boston, 1866; aged 82; died suddenly, January 9, from heart disease.

Leland S. Weaver, White Cloud, Mich.; University of Michigan Medical School, Ann Arbor, 1864; aged 79; died, January 9, from pneumonia.

Wilbur Phelps Morgan ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1862; aged 81; died, December 20, from senility.

Sarah Brooke, Atascadero, Calif.; Woman's Medical College of Pennsylvania, Philadelphia, 1874; aged 83; died, January 4, from paralysis.

Edward Philip Koch, Chicago; Missouri Medical College, St. Louis, 1881; aged 68; died, January 25, from heart disease and chronic nephritis.

John Babington, Detroit; Hahnemann Medical College and Hospital of Chicago, 1881; aged 67; died suddenly, January 6, from heart disease.

George Draper Kelley, Lexington, Ky.; Medical School of Harvard University, Boston, 1892; aged 56; died, January 8, from heart disease.

John B. Mathiesen ✠ Eau Claire, Wis.; University of Christiania, Norway, 1898; aged 50; died, January 17, from pleuropneumonia.

Sevier E. Snodgrass, West, Texas; Missouri Medical College, St. Louis, 1879; aged 73; died suddenly, January 2, from acute indigestion.

Emil Kuder, Coffeyville, Kan. (licensed, Kansas, 1901); veteran of the Franco-Prussian War; aged 71; died, January 2, from uremia.

Homer Lafayette Mershon, Saxonburg, Pa.; Bellevue Hospital Medical College, New York, 1878; aged 72; died, November 27.

Peter C. Bradley, Shawnee, Okla.; Medical Department University of Louisville, Louisville, Ky., 1891; aged 69; died, January 9.

Charles Rawling, New Haven, Conn. (licensed, Connecticut, 1893); Civil War veteran; aged 88; died, January 10, from senility.

James R. Williams, High Point, N. C. (licensed, years of practice); aged 88; died, January 2, from senility.

Henry Shepard, Tahona, Okla. (licensed, years of practice); aged 75; died, December 10.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Healing Springs Water.—The Virginia Hot Spring Co., Hot Springs, Va., shipped in interstate commerce in May, 1922, a quantity of "Healing Springs Water" that was misbranded. The federal chemists reported that analysis of a sample of the water showed it to be a moderately mineralized water, the principal dissolved constituents being the bicarbonates of calcium and magnesium and magnesium sulphate (Epsom salt). The product was labeled in part "a medicinal water recommended in the case of gout, rheumatism, insomnia, kidney and bladder troubles and for the nervous system." These statements were declared false and fraudulent for the reason that the article did not contain any ingredient or combination of ingredients capable of producing the effects claimed. In August, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 10677; issued Nov. 23, 1922.*]

Bick's Sarsaparilla.—The Palestine Drug Co., St. Louis, Mo., shipped (among other products) during the summer of 1920 a quantity of "Bick's Sarsaparilla" that was misbranded. The federal chemists reported that the preparation contained less than 1 per cent. sodium salicylate, 0.7 per cent. potassium iodid, plant drugs extractives, including sarsaparilla and a laxative drug, sugar, alcohol and water. It was falsely and fraudulently labeled as a blood purifier. In May, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 10693; issued Nov. 23, 1922.*]

Yerk's Wine Extract of Cod Liver Oil.—The Yerk's Chemical Co., Winston-Salem, N. C., shipped in October, 1921, a quantity of this preparation that was misbranded. The Bureau of Chemistry analyzed the product and reported that it consisted essentially of compounds of sodium, potassium, calcium, iron, quinin, strychnin and phosphorus, extracts of plant drugs, possible traces of cod-liver oil, malt extract, sugar and alcohol. It was flavored with benzaldehyde. The product was falsely and fraudulently labeled so as to create in the minds of purchasers the impression that the article was an effective remedy for "General Debility, Nervous Prostration, Tuberculosis, Emaciation, Scrofulosis, Winter Cough, Bronchitis, etc." In June, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 10729; issued Dec. 18, 1922.*]

Anemia Tablets.—In March, 1920, a quantity of these tablets consigned by Carlos M. Rivoll, Laredo, Texas, and shipped from Texas to California were declared misbranded. The federal chemists reported that the tablets consisted of milk sugar (95 per cent.) and small quantities of cinchona alkaloids, charcoal, sulphur, gum and compounds of arsenic, phosphorous, iron and sodium. The circulars accompanying these tablets declared that they would "restore lost vigor, relieve mental disorders, neurasthenia, etc.," and that they would also "produce an appetite," cure rickets and menstrual disorders. These and similar claims were declared false and fraudulent and in April, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 10824; issued Dec. 23, 1922.*]

Correspondence

DEATH RATE OF PHYSICIANS

To the Editor:—The statement in the editorial on the deaths of physicians in the United States in 1922 (THE JOURNAL, January 6) was to the effect that the death rate of physicians in 1922 was 17.73 per thousand, making it appear that this was a rate comparable in some respects to the death rates usually quoted for general population groups. Would it not perhaps be well in future statements with regard to physicians' death rates to indicate quite clearly that this is a selected age and sex (mainly) death rate, as physicians are still preponderantly males. As a matter of interest, I obtained, through the courtesy of Dr. Dublin of the Metropolitan Life Insurance Company the death rates for males at all occupations and at different age groups in 1920. It will appear from the table that, although the death rate of physicians is slightly higher than that of lawyers, judges and justices of the ages 25 to 44, it is strikingly less than the death rate of all occupations of men at this age group. When, however, we reach the age group 45-64 we find the excess of physicians' death rate over that for all occupations notable, and at the ages 65 and over and for all ages the physicians' death rate far exceeding the death rate of other occupations. So, in spite of the fact that we are dealing with a special age and occupation group, which might justify our expecting a higher rate in comparison with other males at these ages, we find a specific excess of deaths for physicians.

DEATH RATES, REGISTRATION STATES, 1920
RATES PER HUNDRED THOUSAND MALES

	10 to 13	14 to 19	20 to 24	25 to 44	45 to 64	65 and Over	All Ages 10
All occupations...	142.2	424.5	521.7	706.4	1648.4	8482.9	1260.1
Physicians and surgeons	.....	.....	527.7	568.0	1960.9	10053.7	1900.9
Lawyers, judges and justices....	.....	.....	401.2	519.9	1964.6	9320.8	1781.7
Clerks (except in stores)	.....	438.9	548.2	801.3	2082.2	7933.5	1023.1

DEATH RATES PER THOUSAND AMONG PHYSICIANS, 1921 AND 1922

J. A. M. A. (1-6-1923).....	17.73	
J. A. M. A. (1-7-1922).....	14.65	(Includes physicians of Canada)
J. A. M. A. (1-1-1921).....	15.46	(Includes physicians of Canada)

HAVEN EMERSON, M.D., New York.

"INTESTINAL WORMS AND APPENDICITIS"

To the Editor:—In the editorial on "Intestinal Worms and Appendicitis" (THE JOURNAL, January 27, p. 256), which gives a review of recent work on the agency of worms, particularly the ordinary pinworm, in the production of this trouble, no reference is made to work which was done a number of years ago, and for that reason I am calling attention to it.

This subject was discussed quite fully by Metchnikoff in his Harben Lectures, published under the title of "The New Hygiene" in 1907. He quotes Desprès as pointing out in 1868 the frequent presence of worms in what were then called "stercoral" abscesses localized in the region of the cecum and ascending colon. Metchnikoff gives a number of observations of his own, one of which concerns a professor of hygiene who apparently contracted appendicitis from his wife through the agency of worms. Another striking instance is that of an estate on which many cases of appendicitis

occurred. A few months' residence on this estate seemed to suffice to bring on an attack of appendicitis. Members of the family, as well as the servants, suffered. It was found that the feces of these people abounded in intestinal worms, and the conclusion was that food must have been frequently contaminated by human execreta containing eggs of worms.

More unusual and equally interesting is the report on necropsies of some fifty chimpanzees in which five cases of acute or chronic appendicitis were found. In one case particularly, which ran an acute course ending in death and which presented characteristic symptoms, intestinal worms were found.

Metchnikoff considered that the injury to the intestinal wall done by worms is entirely comparable to the breaks in the skin caused by insects in furnishing entrances for pathogenic organisms.

It has always been a source of surprise to me that the surgeons of America, who, I believe, have done more than any other surgeons in the world in regard to appendicitis, have not followed the indications pointed out in these lectures of Metchnikoff. The attention now being given to the matter in Germany illustrates the old saying that "there is nothing new under the sun."

MAZYCK P. RAVENEL, M.D., Columbia, Mo.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MERCUPRESSEN

To the Editor:—I would appreciate any information which you may be able to give me regarding Mercupressen and Neo-Mercupressen. These articles are manufactured by the Barsa Chemical Company, Inc., 28 West Twenty-Third Street, New York City.

GEORGE EDWARD PERKINS, M.D., Boston.

ANSWER.—From the advertising issued by the Barsa Chemical Company, Inc., 28 West Twenty-Third Street, New York City, for Mercupressen, this product is essentially the same as the product which the Spirocide Corporation, 28 West Twenty-Third Street, New York City, marketed as "Spirocide."

Spirocide is claimed to be composed of metallic mercury, copper sulphate, cypress cones, henna, nutgalls and dried pomegranates. The product was sold in the form of tablets. For use, the tablet was ignited, and the fumes were inhaled by the patient. The Council on Pharmacy and Chemistry held that the claims for Spirocide were unproved and unwarranted, and that the routine use of an inexact method for the administration of mercury is detrimental to sound therapy (THE JOURNAL, Jan. 22, 1921, p. 259). The Council's rejection of Spirocide was subsequently fully sustained by the reinvestigation of the inhalation treatment of syphilis carried out by Cole, Gericke and Sollmann (THE JOURNAL, March 4, 1922, p. 654).

WOOD'S METAL

To the Editor:—Please give the formula for Wood's metal, used in making casts of blood vessels, as described by A. A. Ghoreyeb (*J. M. Res.* **35**: 87 [Sept. 16] 1916).

H. H. TURNER, Louisville, Ky.

ANSWER.—Bismuth, 50 per cent.; lead, 25 per cent.; tin, 12.5 per cent.; cadmium, 12.5 per cent. Thorpe's Dictionary of Applied Chemistry gives this formula: bismuth, 8 parts; lead, 4 parts; tin, 4 parts, and a little cadmium.

Autolysis.—"Autolysis" has quite generally been used to designate a process of cell or tissue deterioration in which the more complex nitrogenous substances, particularly proteins, are reduced to simpler form through the agency of enzymes which have been elaborated by the cells or tissues themselves.—Sturges and Retther, *J. Bacteriol.*, November, 1922.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, March 6. Sec., Dr. Harry C. De Vighne, Juneau.
KANSAS: Topeka, Feb. 13. Sec., Dr. Albert S. Ross, Sabetha.
NATIONAL BOARD OF MEDICAL EXAMINERS: Written examination in Class A medical schools. Part I and II, February 12-14 and February 15-16. Sec., Dr. John S. Rodman, 1310 Medical Arts Bldg., Philadelphia. Application for the February examination must be sent in by January 1.
NEW HAMPSHIRE: Concord, March 9-10. Sec., Dr. Charles Duncan, Concord.
VERMONT: Burlington, Feb. 13. Sec., Dr. W. Scott Nay, Underhill.

GRADUATE INSTRUCTION IN TUBERCULOSIS

With Particular Reference to the University of Minnesota*

J. A. MYERS, PH.D., M.D.
Assistant Professor of Medicine, University of Minnesota Graduate and Medical Schools
MINNEAPOLIS

Statistics recently compiled by Dr. Bosworth[1] of the Minnesota State Advisory Commission show that of all the tuberculous patients (5,786) discharged from the county sanatoriums of Minnesota, the condition in 17.2 per cent. was incipient, in 35.6 per cent. moderately advanced, and in 47.2 per cent. far advanced on admission. From the time of the opening of the Minnesota State Sanatorium to Jan. 1, 1922, there had been discharged from that institution 3,921 pulmonary tuberculosis patients. The disease in 17.3 per cent. of this number was incipient, in 47.1 per cent. moderately advanced, and in 35.6 per cent. far advanced on admission. The figures from the state sanatorium are especially significant, since this institution was established by law for the treatment of incipient tuberculosis. It is plainly evident that something is wrong with our present educational system and methods of diagnosis and treatment of tuberculosis when 82.7 per cent. of the patients being admitted to these county and state sanatoriums have lost their best chances of complete recovery before admission.

Krause,[2] Klotz,[3] McRae,[4] Dock,[5] Thayer[6] and others have shown that there is an opportunity for much improvement in the teaching of tuberculosis to undergraduates in our medical schools, but it is obvious that because of the crowded curriculums in these schools, students cannot become experts during the time they are at work as candidates for the medical degree. It seems necessary, therefore, that considerable time be spent after graduation in an intensive study of tuberculosis. This also holds true in other branches, such as surgery, general medicine, obstetrics, otolarynology and pediatrics. Concerning graduate instruction in such subjects, Lyon,[7] Frazier and Lewis,[8] Litzenberg,[9] Shambaugh,[10] Hamil-

* From the Department of Internal Medicine, University of Minnesota Medical School.
* Read before the Tenth Annual Meeting of the Mississippi Valley Conference on Tuberculosis, Oct. 9, 1922, Milwaukee.

1. Bosworth, Robinson: Personal communication to the author.
2. Krause, A. K.: Undergraduate Instruction in Tuberculosis, Am. Rev. Tuberc. **1**: 233 (June) 1917; Some Problems of Medical Education in Tuberculosis, ibid. **5**: 755 (Nov.) 1921; Tr. Nat. Tuberc. **17**: 202, 1921.
3. Klotz, W. C.: Undergraduate Instruction in Tuberculosis, Am. Rev. Tuberc. **5**: 751 (Nov.) 1921; Tr. Nat. Tuberc. **17**: 194, 1921.
4. McCrae, Thomas: The Separation of Tuberculosis from General Medicine, Tr. Nat. A. Study & Prev. Tuberc. **12**: 83, 1916.
5. Dock, George: The Relation of the General Hospital to Tuberculosis, Tr. Nat. A. Study & Prev. Tuberc. **12**: 89, 1916.
6. Thayer, W. S.: Observations on the Teaching of Tuberculosis, Tr. Nat. A. Study & Prev. Tuberc. **12**: 92, 1916.
7. Lyon, E. P.: Graduate Education in the Clinical Branches, and the Minnesota Experiment, J. A. M. A. **69**: 1307 (Oct. 20) 1917.
8. Frazier, C. H., and Lewis, Dean: Report of the Committee on Postgraduate Instruction in Surgery, J. A. M. A. **76**: 732 (March 10) 1921.
9. Litzenberg, J. C.: The Graduate Degree in Obstetrics and Gynecology, Am. J. Obst. **78**: 404 (Sept. 18) 1918.
10. Shambaugh, G. E.: An Experiment in Graduate Training in Otolaryngology, J. A. M. A. **79**: 365 (July 29) 1922; Graduate Instruction in Oto-Laryngology (Report of Committee on Graduate Training), A. M. A. Bull., Jan. 15, 1921.

ton,[11] Muller,[12] Sedgwick[13] and Wilson[14] have contributed valuable reports and articles. The popularity of such work after graduation has increased until now we find many physicians expressing a desire to register for one or more years in a graduate school of medicine. Such institutions as the universities of Harvard, Pennsylvania, Tulane, California and Minnesota have already developed graduate schools in medicine to train just such physicians.

Baldwin[15] has called attention to the fact that there are two principal reasons why graduate instruction in tuberculosis is necessary: 1. Most teachers are not especially interested in tuberculosis; therefore, their students receive no special training in this subject. 2. In the average medical school, there are few cases of tuberculosis under observation, since the majority of such cases are sent to sanatoriums and to chronic wards, and are no longer available for special study. Since these facts have obtained in the past, Baldwin further points out that most of the men who have applied for graduate instruction in tuberculosis at the Trudeau School have had their interest aroused because they have developed the disease themselves, or have some connection with an institution which demands more knowledge of tuberculosis. This statement of Dr. Baldwin's is gratifying: "There is an increasing demand on the part of the men who have no special connection with tuberculosis institutions, who wish to perfect themselves in the diagnosis and treatment of tuberculosis."

In the large graduate schools, arrangements may be made for considerable study in tuberculosis. However, in most of them, no attempt has been made to organize work for the training of specialists in this field.

Tuberculosis has become a specialty, and much of the future success in the fight against this disease depends on the training of specialists. This fact is being recognized more and more, as shown by these two statements:

"If any real advance is to be made in the organization and administration of an effective tuberculosis service, some adequate system will have to be devised, whereby both medical undergraduates and graduates, and especially those who propose to take up the responsible duties of a tuberculosis officer, are thoroughly trained."[16]

"All the available resources for giving intensive, and yet comprehensive, practical instruction in tuberculosis should be organized and placed within the reach of all who wish to specialize in this subject, and any others who would care to avail themselves of the opportunity."[17]

The income from the Trudeau Foundation makes available annually from three to five fellowships in tuberculosis. These fellowships are granted to tuberculous physicians, medical students or other scientific workers who are engaged in the sanatorium clinical work as members of the staff or in the laboratories as research workers. Dr. Baldwin[18] has informed me that there is always a waiting list for these fellowships, and that the average time each fellow spends in study is approximately eight months.

There are several short graduate courses in tuberculosis offered in the United States. The leading courses of this kind are given at the Trudeau School of Tuberculosis, at Saranac Lake, N. Y., the Colorado School of Tuberculosis, at Colorado Springs, Colo., and the United States Public Health Tuberculosis School, at Oteen, N. C. Each summer these schools offer well organized, intensive courses of from four to six weeks' duration. In some of them the number of applicants far exceeds the capacity of the school. In fact, in one of them, the registration is completed nearly a year in advance of the course.

From the foregoing, it is obvious that there is a real need, and a demand, for well organized graduate instruction in tuberculosis. Therefore, an attempt has been made in the University of Minnesota to organize all available material so as to make graduate study profitable for physicians who desire to become better acquainted with tuberculosis or to prepare for special work in this particular field.

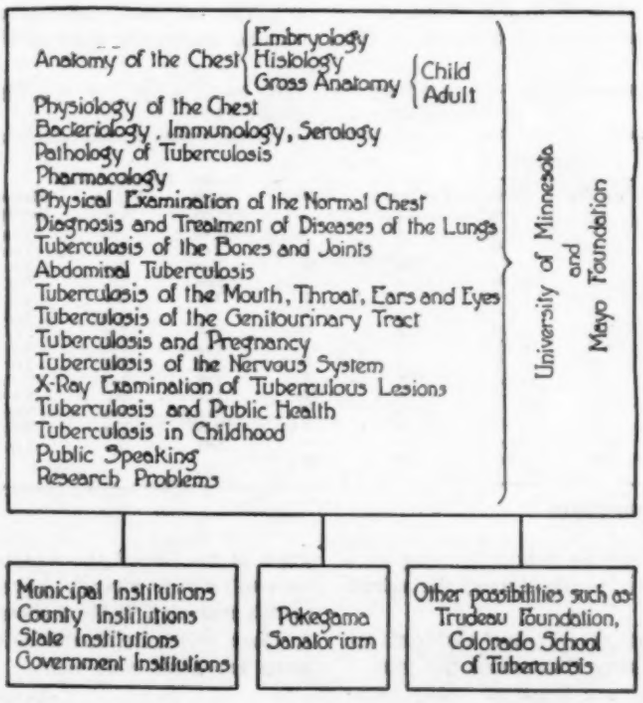

Fig. 1.—Schema of graduate work in tuberculosis.

THE FUNDAMENTALS

In organizing this work in the University of Minnesota, the fundamental subjects have been given due consideration (Fig. 1). In anatomy, the student may devote considerable time to the microscopic and gross study of the chest and its contents in the embryo, fetus, child and adult. The department of physiology offers opportunities for special study of the functions of the organs of the chest. It provides also for the study of the chemistry of respiration, blood, etc. In the department of bacteriology, the isolation, growth, staining and morphology of the tubercle bacillus may be thoroughly studied. Special inoculation work, preparation of vaccines, immunity studies, complement fixation and agglutination tests are taught. The department of pathology provides facilities for the study of experimental tuberculosis. A wealth of gross and microscopic preparations are available which show the different stages of the disease and its effects on the various organs of the human body. There is an opportunity for participation in an adequate number of necropsies on patients dying of tuberculosis. The department of pharmacology offers facilities for the study of the effects of drugs on tuberculous lesions.

11. Hamilton, A. S.: Graduate Training in Nervous and Mental Diseases, J. A. M. A. **77**: 659 (Aug. 27) 1921.
12. Muller, G. P.: Graduate Instruction in Surgery, J. A. M. A. **77**: 503 (Aug. 13) 1921.
13. Sedgwick, J. P.: The Requirements for the Higher Degree in Pediatrics, Tr. A. Am. Teachers Dis. Child. **11**: 12-20, 1917.
14. Wilson, L. B.: Report of Committee on Graduate Medical Education, A. M. A. Bull. **14**: 45-49 (July 15) 1920; Teaching the Fundamentals of Surgery from the Point of View of the Graduate School, J. A. M. A. **79**: 120 (July 8) 1922.
15. Baldwin, E. R.: Post-Graduate Education in Tuberculosis, Tr. Nat. Tuberc. A. **17**: 198, 1921.
16. Woodhead, G. S.: Training in Tuberculosis, Brit. J. Tuberc. **15**: 53 (April) 1921.
17. King, D. B.: Post-Graduate Instruction in Tuberculosis, Brit. J. Tuberc. **15**: 55 (April) 1921.
18. Baldwin, E. R.: Personal communication to the author.

Just as fast as funds permit, books, periodicals and reprints devoted to tuberculosis are being added to the medical school library. During the present year, the graduate school granted a special fund for the collection of a bibliography on tuberculosis. A committee is engaged in this work at the present time, and it is hoped that time and funds will permit such a complete work that the burden of collecting reference titles, which so often falls on graduate students, will be lessened for those specializing in tuberculosis.

CLINICAL MATERIAL

The clinical material for this work is found chiefly in municipal, county, state, government and private hospitals and sanatoriums for the tuberculous.

The Minneapolis General Hospital operates a sanatorium for the tuberculous with a capacity for 135 adults.

The St. Paul City and County Hospital operates a tuberculosis pavilion with a capacity for 110 adults.

The Lymanhurst School for Tuberculous Children maintains a clinic where more than 300 schoolchildren were examined for tuberculosis, and more than 200 other tuberculous children were treated and given instruction in this special school last year. The Trudeau School, serving as a preventorium, cares for ninety-six pupils during the school year.

In the St. Paul Preventorium, seventy-five children are receiving excellent care and training throughout the year.

In the state of Minnesota, there are fourteen county sanatoriums and one state sanatorium. These institutions are under the supervision of the state advisory commission. The resolution contained in a recent communication from Dr. Robinson Bosworth[1] of the advisory commission shows the attitude which this commission has toward the teaching of tuberculosis:

> *Resolved*, That the dean of the medical department of the University of Minnesota be advised that the several tuberculosis sanatoria of the state offer their facilities for the teaching of tuberculosis by their medical staffs to the students of the medical department of the university and urge that the medical department of the university accept and use these facilities so offered.

Table 1 shows that these institutions make available for study 886 tuberculous adults and 140 tuberculous children.

The state hospital for crippled children offers excellent facilities for the diagnosis and treatment of bone and joint tuberculosis. One hundred beds are available for such cases.

The state sanatorium is equipped to care for 260 early cases. Although other favorable cases are admitted, this institution offers excellent opportunities for the study of minimal tuberculosis.

The United States Veterans' Bureau, District No. 10, with headquarters in Minneapolis, operates tuberculosis clinics in Minneapolis and St. Paul where approximately 8,000 examinations were made last year. This bureau also provides beds for the observation and treatment of 159 patients in Minneapolis, and 115 such patients in St. Paul.

Pokegama Sanatorium is a private institution located near Pine City. It has a capacity for fifty tuberculous patients, and contains modern equipment for the study and treatment of the disease. It has arranged to support two fellowships for the graduate study of tuberculosis

The Mayo Clinic offers facilities for the diagnosis of diseases of the chest. The roentgen-ray department offers unusual opportunities for the study of tuberculous lesions of various parts of the body. Here the student may also receive excellent training in surgery of the thorax.

Figure 2 shows the distribution of the institutions for the tuberculous throughout the state. The distance from the university to some of these institutions may be offered as an objection; yet there is sufficient material in several of them to justify the trip, and the expenditure of considerable time in them.

In Table 2 it will be observed that there are already available for study approximately 2,100 cases. This number will be materially increased through the new building program at the Glen Lake Sanatorium and at new county sanatoriums which already have been proposed. In addition to this material, Table 3 shows that tuberculosis clinics exist in close proximity to the university where more than 15,000 visits are made each year.

TABLE 1.—COUNTY SANATORIUMS OF MINNESOTA, THE FACILITIES OF WHICH ARE AVAILABLE TO GRADUATE STUDENTS

Sanatorium	Capacity		Staff		Laboratory Facilities	Roentgen-Ray Equipment	Heliotherapy	Artificial Pneumothorax	Postural Rest	Approximate Distance from University, Miles
	Adults	Children	Physicians	Nurses						
Buena Vista	30	0	1	4	Yes	No	Yes	Yes	Yes	80
Deerwood	30	0	1	4	Yes	No	Yes	Yes	Yes	100
Fair Oaks Lodge	30	0	1	4	Yes	No	Yes	Yes	Yes	150
Glen Lake	202	60	14*	39	Yes	Yes	Yes	Yes	Yes	15
Lake Julia	40	8	1	5	Yes	No	Yes	Yes	Yes	260
Mineral Springs	40	0	1	5	Yes	Yes	Yes	No	Yes	50
Oakland Park	32	0	1	4	Yes	Yes	Yes	Yes	Yes	300
Ottertail County	45	0	1	6	Yes	Yes	Yes	Yes	No	125
Nopeming	130	70	4	27	Yes	Yes	Yes	Yes	Yes	165
Riverside	50	0	1	8	Yes	Yes	Yes	Yes	Yes	120
Sand Beach	45	2	1	7	Yes	Yes	Yes	Yes	Yes	150
Ramsey County Pavilion	110	0	2	12	Yes	No	Yes	No	Yes	10
Southwestern Minnesota	52	0	2	7	Yes	Yes	Yes	Yes	Yes	175
Sunny Rest	50	0	1	7	Yes	Yes	Yes	Yes	Yes	250
Total	886	140	32	139	Yes	No	Yes	Yes	Yes	

* This number includes medical consultants.

INSTRUCTION

Candidates for an advanced degree may select tuberculosis as their major subject. They are then required to select a closely allied or supporting subject as a minor. Such students are strongly advised to spend at least one third of their time in anatomy, physiology, pathology and bacteriology, and the remaining time in clinical studies. The method of instruction is thus described by Dean Lyon:[2]

"There is no hand feeding, no formal reciting, no reporting of absences, no routine laboratory exercises. The essential environment consists of libraries, laboratories and clinical material, with competent supervision, and above all, criticism. The student with his adviser as a guide, is turned loose to educate himself. Mostly he learns by doing, which is the natural way."

Figure 1 shows some of the subjects which are emphasized, as well as various opportunities for study outside the university. In special cases, arrangements may be made for the student to spend some time in institutions in other states, such as the Trudeau and the Colorado schools of tuberculosis. It will be seen that the research problem has been given a prominent place. As pointed out by Webb,[19] there is much

19. Webb, G. B.: Tuberculosis: The Rationale of Research, Am. Rev. Tubere. 5:271 (June) 1921; Tr. Nat. Tubere. A. 17:26, 1921.

that we do not know about tuberculosis. Therefore, there are many interesting problems on which much time may be spent with profit. Students who remain more than one year may equip themselves with a knowledge of the fundamentals of original investigations so that they are prepared to carry on research work throughout the active years of their lives.

Provisions have been made for students of three groups:

Group 1 consists of students who hold medical degrees, and who desire to spend from one to three years in the study of tuberculosis. Each student selectes a research problem, either laboratory or clinical, which is pursued throughout the course. In addition to this, students choose certain courses in anatomy, physiology, bacteriology and pathology, as well as courses in physical findings in the normal chest, and diagnosis and treatment of diseases of the lungs. Students interested in special phases of tuberculosis may spend considerable time in institutions where such special material is available. For example, students interested in tuberculosis of childhood spend a considerable time in the institutions for children, while students especially interested in surgery of the thorax devote a good deal of time to this subject at the Mayo Clinic, the state hospital for crippled children, and the Glen Lake Sanatorium. Other students whose problems require that they see many patients may do so by spending short periods in several of the institutions. Each student in this group must acquire a working knowledge of tuberculosis as a whole.

The students in this group, on the satisfactory completion of their work, are granted the degree of Master of Science in Medicine or Doctor of Philosophy in Medicine, depending on the length of time spent, and the results accomplished.

Group 2 consists of students who are majoring in some other field, such as obstetrics, pediatrics, surgery or general medicine, and who desire to spend some time in the study of tuberculosis. Such students are permitted to select for study any phase of tuberculosis they desire.

Group 3 consists of general practitioners and recent medical graduates who wish to spend a short time, possibly not more than one quarter, in the study of tuberculosis. Arrangements are made whereby such physicians may devote their entire time during this period to the graduate study of tuberculosis. Other general practitioners who are unable to spend this much time may soon avail themselves of a four to six weeks' intensive course in tuberculosis. An attempt is being made to organize this course to cover approximately the same time and subjects as the short courses at the Trudeau, Colorado and Oteen schools of tuberculosis.

Three graduate fellowships in tuberculosis are in existence at the University of Minnesota. The first of these is supported by the Hennepin County Tuberculosis Association. This fellowship pays the student $750 the first year, and a somewhat larger amount may be allowed for the second and third years. Two other graduate fellowships are supported by Dr. H. Longstreet Taylor. Students holding either of these two fellowships are required to spend one half of their time at the Pokegama Sanatorium, while the greater part of the remaining time is spent at the University of Minnesota. These fellowships pay from $1,000 to $1,500 a year.

TUBERCULOSIS AS A LIFE WORK

In talking with senior medical students and recent graduates in medicine, one hears many objections to tuberculosis as a life work. Probably one of the reasons for these objections is that in many medical schools the work in tuberculosis is poorly organized, and the students do not catch a vision of the possibilities in this field. Many physicians have stated that they have no desire to deal with a hopeless disease. Here the fault does not lie with such physicians but with their undergraduate training in tuberculosis. It is gratifying to be aware of the interest that is being manifested in undergraduate instruction in tuberculosis in various parts of the country at present, and it is hoped that the efforts being made in this direction soon will be productive of more graduates in medicine who know that a greater percentage of those infected recover from tuberculosis than from any other major disease.

Other physicians object to tuberculosis work on the ground that they themselves may become tuberculous through long association with tuberculous patients. To be sure, physicians always take the risk of becoming infected while dealing with any communicable disease. It has been shown that adult infection does occur in tuberculosis. However, the danger is not great to any physician who exercises intelligently the ordinary precautions. The report of Toan[20] of the Michigan State Sanatorium shows that in twelve years there have appeared only three cases of active tuberculosis among 857 nontuberculous employees who had lived at the sanatorium for periods of from three months to twelve years. Furthermore, in these three cases it was very unlikely that their

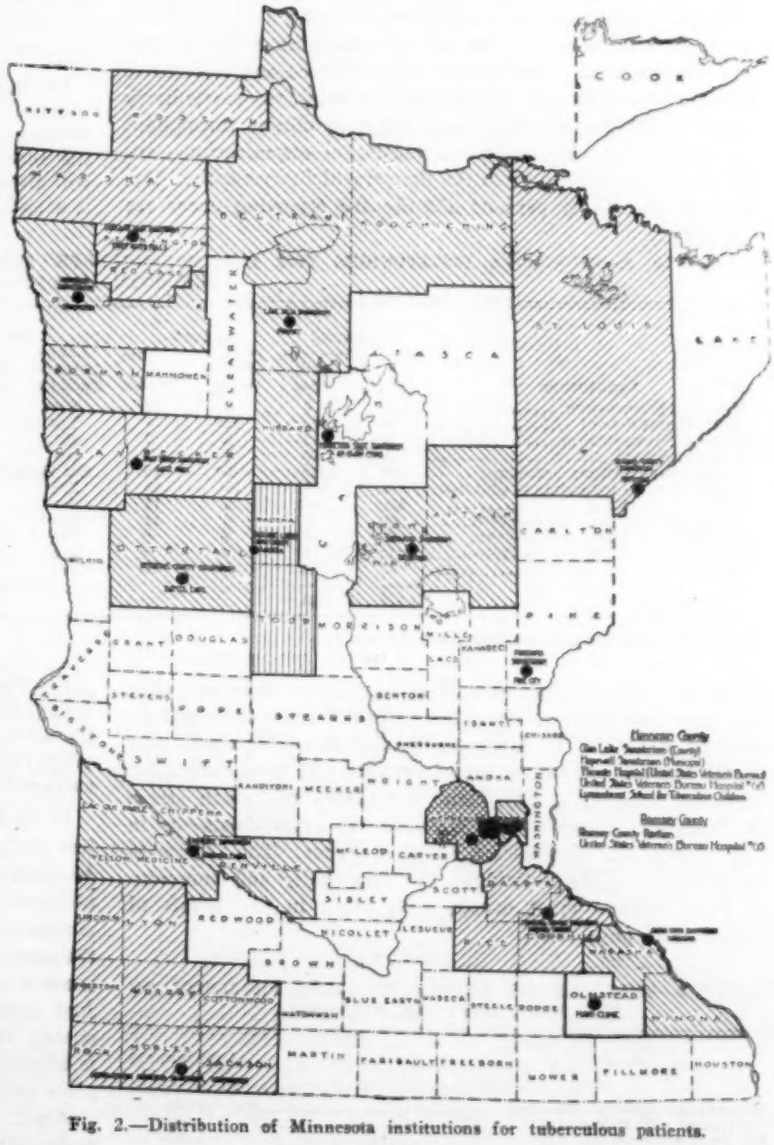

Fig. 2.—Distribution of Minnesota institutions for tuberculous patients.

20. Toan, J. W.: A Study of Employees of the Michigan State Sanatorium for a Period of Twelve Years, read before the Mississippi Valley Conference on Tuberculosis, Sept. 12, 1921.

disease was contracted at the sanatorium. "The stay of two years and over on the part of twenty-nine apparently well employees has not produced a single authentic case of active tuberculosis." Similar reports have been made from other institutions for the tuberculous. It is much safer for the physician or the layman to associate with a patient whose sputum is positive, and who has been trained to prevent the spread of bacilli, than to be found in public gatherings where many unrecognized and untrained patients may exist.

Still other physicians state that the financial returns are too poor from treating tuberculous patients. They add also that public health and other organizations are operating so many free clinics and institutions for the diagnosis and treatment of tuberculosis that the future offers little or no opportunity in this field for the private practitioner. It is true that the financial remuneration from tuberculous patients is not so great as in some other fields of medicine, particularly surgery; but the organizations operating clinics throughout the country, as well as other educational organizations, are instructing the public as to the dangers of tuberculosis. The result is that many persons already are reporting every six

more well trained specialists we produce, the easier will be the fight and the sooner the victory will be won. If the free clinic is developed to the extent of discouraging candidates for graduate education in tuberculosis, the present generation will not be affected greatly, but two or three generations hence will find us with few or no scientifically trained specialists in tuberculosis. On the other hand, the free clinic properly organized and controlled cannot help but be a splendid educational agent helpful to patients and special workers, and playing a most effective rôle in the campaign against tuberculosis.

The prospective graduate student in tuberculosis inquires as to what positions are available when his special training is completed. In discussing what attracts young physicians to enter on a scientic medical career, Krause[21] recently said:

"It is, besides the facilities and opportunities for work, the possibility of ultimately attaining a position of dignity and influence in their chosen work. This is, and always will be, the incentive: the opportunity to make money, to 'cash in' will always be subsidiary, and when it comes and is grasped, it usually plays havoc with a man's usefulness as an investi-

TABLE 2.—MINNESOTA INSTITUTIONS FOR THE TUBERCULOUS, THE FACILITIES OF WHICH ARE AVAILABLE TO GRADUATE STUDENTS

Sanatorium	Capacity		Staff		Laboratory Facilities	Roentgen-Ray Equipment	Heliotherapy	Artificial Pneumothorax	Postural Rest	Surgical	Knopf's Physiologic Adjuvant	Approx. Distance from University, Miles
	Adults	Children	Physicians	Nurses								
Hopewell Sanatorium	135	0	2	18	Yes	Yes	Yes	Yes	Yes	Yes	Yes	5
Lymanhurst School	0	125	22*	7	Yes	Yes	Yes	No	No	No	No	2
St. Paul Preventorium	0	75	2	7	No	No	Yes	No	No	No	No	10
Trudeau School	0	96	1	1	No	No	No	No	No	No	No	½
County sanatoriums (combined)	886	140	32*	139	See Table 1							
State Hospital for Crippled Children	0	100	35*	22	Yes	Yes	Yes	No	No	Yes	No	10
State Sanatorium	231	29	2	14	Yes	Yes	Yes	No	Yes	No	Yes	202
United States Veterans' Bureau — Thomas Hospital	75	0	2	12	Yes	Yes	Yes	Yes	Yes	No	No	½
United States Veterans' Bureau — Asbury Hospital	84	0	4	8	Yes	Yes	Yes	Yes	Yes	Yes	No	1
United States Veterans' Bureau — Aberdeen Hospital	115	0	3	7	Yes	Yes	Yes	No	Yes	Yes	No	10
Pokegama Sanatorium	50	0	7*	13	Yes	Yes	Yes	Yes	Yes	Yes	No	75
Total	1,576	565										

* This number includes medical consultants.

to twelve months for examination in order to make sure that they are free from tuberculosis. Such a procedure will be adopted, doubtless, by large numbers of people as the educational work is continued and increased. It is questionable, however, whether a physician who places too much stress on financial returns should specialize in tuberculosis—or in any other phase of medicine, for that matter. The service to be rendered to the individual, the community and humanity at large always must occupy first place in the minds of trustworthy physicians.

TABLE 3.—TUBERCULOSIS CLINICS IN CLOSE PROXIMITY TO THE UNIVERSITY OF MINNESOTA

	Approximate Number of Visits Yearly
Minneapolis General Hospital	1,760
University of Minnesota	1,700
St. Paul City Clinic	3,500
United States Veterans' Bureau, Minneapolis and St. Paul	8,000
Lymanhurst School for Tuberculous Children	500
Student Health Service, University of Minnesota	400
Total	15,860

Is the objection to free clinics justified? Both affirmative and negative answers may be given to this question. It is true that organizations operating such clinics will defeat their end if their members become too enthusiastic. Some of these organizations are in the control of laymen or salaried medical men who have not seen the dangers of overdeveloping the free clinics. Unless some specific treatment for tuberculosis is discovered, we must continue our fight somewhat along the present lines for generations to come. The

gator. Without the incentive I have mentioned, we can look forward to but little advance in real tuberculosis education; for we will not be in a position to train teachers of the same grade, say, as those who now occupy our chairs of medicine, surgery, pediatrics, etc."

At present, we are able to point the student to a very few chairs of tuberculosis in the medical schools of America. Moreover, in most medical schools, there is not a division of tuberculosis, but this subject is taught as a part of the course in general medicine. It is obvious, therefore, that at the present time we have little or no attraction to offer the student who desires to become a teacher of tuberculosis. Just appearing on the horizon, however, is what promises to change this condition in the next few decades. The public is already beginning to ask why our medical schools do not place more emphasis upon tuberculosis.

When such visions are translated into realities, in all probability we shall experience little difficulty in securing the proper type of students for graduate work in tuberculosis. On the other hand, so little interest has been manifested in graduate work in tuberculosis in the past that, as Krause has pointed out, if every medical school in the country were to open a new department, or even division of tuberculosis, it is really questionable whether enough scientifically trained men, that is, men qualified for teaching and research, in this field could be found to occupy the positions.

There are more than 500 sanatoriums for the tuberculous in the United States, many of which offer positions to physicians well trained in tuberculosis. It is true that the majority of these positions pay poorly in terms of dollars and cents;

21. Krause, A. K. (Footnote 2, second reference).

but some of them offer excellent opportunities for study and are good stepping stones for those seeking advancement. The sanatorium is often objected to on the ground of being so isolated from great cities and society. We must admit that in former days gross errors were made in selecting sites for such institutions; but present tendencies are toward placing them where their facilities will be available for the development of special tuberculosis departments in our medical schools.

SUMMARY

1. Tuberculosis has become a specialty in the field of medicine.

2. The present teaching facilities in this country are inadequate to train a sufficient number of specialists.

3. Owing to the crowded condition of the medical school curriculums, graduate work in tuberculosis is essential for the proper training of specialists.

4. The University of Minnesota Graduate School of Medicine has access throughout the state to approximately 1,500 tuberculous adults and more than 500 children in sanatoriums and preventoriums for special study. In addition, there are tuberculosis clinics in close proximity to the university where more than 15,000 visits are made annually.

5. The anatomy, physiology, bacteriology, pathology and pharmacology laboratories offer special advantages for the study of general tuberculosis, other diseases of the lungs, and closely allied subjects.

6. The objects of the graduate work in tuberculosis in the University of Minnesota are: (1) to offer general practitioners special training in the diagnosis of early tuberculosis; (2) to produce special laboratory and roentgen-ray workers in tuberculosis; (3) to produce productive research workers in various phases of tuberculosis, and (4) to produce scientifically trained specialists with a working knowledge of tuberculosis as a whole.

Alaska September Examination

Dr. Harry C. DeVighne, secretary, Alaska Territorial Medical Examining Board, reports that one candidate, a graduate of the St. Louis University School of Medicine, was licensed at the written examination held at Juneau, Sept. 5, 1922. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass.

West Virginia October Examination

Dr. W. T. Henshaw, secretary, West Virginia Public Health Council, reports the oral, written and practical examination held at Charleston, October 10, 1922. The examination covered 11 subjects and included 132 questions. An average of 80 per cent. was required to pass. Thirteen candidates were examined, all of whom passed. Ten candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Emory University		(1922)	89.3
Chicago Medical School		(1920)	80
University of Louisville Medical Department		(1922)	91.7
Tulane University		(1921)	85
College of Physicians and Surgeons, Boston		(1915)	81.7
St. Louis College of Physicians and Surgeons		(1922)	80
University of Cincinnati		(1920)	80
Western Reserve University		(1920)	82.2
Jefferson Medical College		(1922)	89.3, 91.3, 92.2
Medical College of Virginia		(1921)	82.4
University of Virginia		(1920)	86.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Louisville Medical Department		(1921)	Kentucky
Baltimore Medical College		(1906)	Penna.
Barnes Medical College		(1907)	Illinois
Jefferson Medical College		(1916)	Penna.
University of Pittsburgh		(1914)	Penna.
Medical College of the State of South Carolina		(1918)	S. Carolina
Vanderbilt University		(1899)	Virginia
Medical College of Virginia		(1917), (1919)	Virginia
University College of Medicine, Richmond		(1899)	Virginia

Social Medicine and Medical Economics

THE DIFFICULTIES OF DR. HADWEN

Some months ago THE JOURNAL commented on the arrival in this country of Dr. Walter J. Hadwen, M.D., J.P., who is apparently the chief propagandist for the antivivisectionists throughout the world. It is now an old story that the efforts of Dr. Hadwen, and the group he represents, were overwhelmingly defeated in Colorado and California, in which antivivisection was submitted to a decision by the people during the last election. Dr. Hadwen has now returned to England and is publishing in the *Abolitionist*, a British antivivisection magazine, a record of his trip. We regret to learn that Dr. Hadwen feels that he was very unkindly treated while here. Thus of his visit to Chicago:

> I did not expect much sympathy from the Press in this city, and I thought I might get some opposition. Chicago is the publishing centre of the *Journal of the American Medical Association*, and I had scarcely put my foot on American soil when an abusive, ill-bred, personal attack upon me appeared in its columns from the editorial pen, probably induced by an announcement of my coming by the Associated Press of Washington, sent to all American newspapers. I am so accustomed to these unscrupulous attacks that they have not the least effect upon me; they fulfil the old maxim: "Bad case, abuse plaintiff's attorney." These men could not fight fair to save their lives.
>
> UNFAIRNESS OF THE MEDICAL PRESS
>
> Last year, the Editor of the same journal published an attack upon me by Surgeon-General Ireland, the medical chief of the American Army, who was backed up by a weak and very long communication from Sir Thomas Goodwin, the Medical Chief of the English War Office; but although I forwarded what I considered a crushing reply to these officials, the Editor declined to publish it. Consequently I have had that attack thrown up at me again and again in the States by medical opponents, and have been gibed at because I "never answered" my traducers! Apparently, it is thought in America that the medical fraternity are not to be trusted to form a judgment of their own, so they have to be mothered and spoon-fed by their literary nurses. I have occasionally experienced a similar lack of justice in England, but I am glad to see that the *British Medical Journal*, which published (from Philadelphia) one of Dr. W. W. Keen's characteristic attacks upon me during my absence in America, courteously allowed Miss Kidd space for a complete answer in my defense.
>
> But there was no opposition at the Chicago meeting. It was held in a huge hall—the Aryan Grotto Theatre—and there was a splendid audience, presided over by Dr. E. B. Beckwith, who has come out very boldly on the side of truth. But the meeting was not well reported, though there were several good interviews published. One leading paper had a record in the early edition, but it was replaced in later editions by an official medical communication of the same length on the "Diphtheria peril"! ["This was the most unkindest cut of all!"—ED.] The serum and vaccine manufacturers hold shares heavily in newspapers throughout the States, and in some cases have their own censor who overrules the Editor and runs the blue pencil through all copy that would interfere with the sale of their wares, and furnishes all the news necessary to promote it. The medical bureaucracy in America is the biggest tyranny that has ever disgraced the history of medicine, and unless the people rise up against it they will presently be completely under its power.

REPORT OF CORNELL PAY CLINIC

The Cornell University Pay Clinic has just issued a report on the first year of its work. During this period, 113,981 visits were made to the clinic by 22,409 different persons. The attendance in various departments varied greatly, the greatest attendance being in medicine, 14,797; in urology, 13,655; in skin, 15,411, and in nose and throat, 14,380. In order to protect the private practitioners of the community and not to duplicate the field covered by the free dispensary, all those visiting the clinic were classified into certain economic groups. Of the 20,000 consecutive cases first admitted, 10,000 were classed as regularly qualified for the clinic. Of these patients, 207 were considered temporary because their applications were due to unemployment, previous illness or a financial emergency; twenty-six required unusual expenses for making of diagnosis; 3,085 were classed as being on a borderline, but admitted for various reasons; 874 were doubtful, but admitted temporarily for a single examination; 117 were not rated, and three were admitted because of special interest as teaching cases. Five thousand and thirty-eight cases were rejected. Of these, 4,520 were capable of meeting the fees of private physicians, and 196 were rejected for miscellaneous reasons. Special studies are being made of the data on which the classification was made, and will be published

later. The medical staff of the clinic included 122 physicians in addition to the consulting faculty. It is pointed out that the patients visiting the clinic represent a larger percentage of problem cases requiring specialist consultants than is usually the case in the free dispensary.

During the first year, 1,360 cases were referred by 824 physicians for diagnosis and then referred back for treatment. This diagnostic clinic is considered a close bond between the clinic and the medical profession.

Rejected applicants are referred either to free clinics or to private practitioners. Patients sent back to their own communities are given lists of four physicians having hospital affiliations in the community.

FINANCES

Exclusive of the cost of new equipment, the 113,981 visits cost $231,875.40. The income from patients was $179,685.09. The average visit, therefore, cost the clinic $2.03, whereas the average income for each visit from patients was $1.57. It is obvious that the deficit must be reduced or the fees raised if the clinic is to meet its obligations of giving patients service at cost.

These are the conclusions of the report:

"At the end of the first year of the pay clinic, it is still too soon to speak with finality. The pay clinic is a sincere effort to meet a real medical need felt by many thousands of persons in this great community. During its first year, the clinic has surpassed the expectations of the Cornell faculty, both on the medical side and in the number of patients. The one permanent essential to the success of any such enterprise is the rendering of a high quality of service. If, in addition, the clinic can contribute to medical instruction and research, can cooperate with the practicing physician, can be made self-supporting, can be so managed as to eliminate the unfavorable, so-called "charity" atmosphere commonly associated with clinics, there is a great gain. But the clinic stands or falls on the rendering of a higher grade of medical service than can otherwise be secured by patients of moderate means at any rate which they can afford."

Book Notices

THE PRINCIPLES OF RADIOGRAPHY. By J. A. Crowther, M.A., Sc.D., F.Inst.P., University Lecturer in Physics Applied to Medical Radiology. Cloth. Price, $2 net. Pp. 138, with 55 illustrations. New York: D. Van Nostrand Company, 1922.

This is an admirable exposition of the physical principles involved in roentgen-ray work. It also enters into the details of construction of the individual items of apparatus used in the production of roentgen-ray exposures. The author states that the several chapters presented are an elaboration of the lectures that he gives on this subject in medical radiology and electrology at Cambridge. The thoroughness of the text is commendable. That it represents English practice is quite evident, which, of course, is to be expected. Several points of difference from modern American procedures are noted, such as the question of spark gap measurement of potential, which the author passes over rather superficially, referring only casually to sphere gaps, and the value of the Coolidge tube, which, he states, does not produce fine shadow detail such as is obtained by the ordinary gas tube. He also gives information regarding the Coolidge tube which is not up to date, and several incorrect statements appear as to the action and behavior of this tube. American readers will find much valuable information on the gas tubes, which, however, are rapidly going into disuse on this side of the Atlantic. As a matter of fact, there are many American roentgen-ray technicians who have never seen a gas tube in action, having always used the Coolidge tube, which, under proper conditions, gives as fine shadow detail as does the gas tube. An obvious error is the legend of Figure 25, which purports to be an injury to the humerus, whereas the shadows are those of a knee, the lower end of the shaft of the femur being fractured. A glaring omission in the text on accessory apparatus is that of the Potter-Bucky diaphragm. This moving grid has become one of the most valuable items in the modern roentgen-ray laboratory, and no book on this subject can be regarded as complete which does not accord it the prominent place it deserves. No reference is made to roentgen-ray film, which is largely displacing the glass plate in all modern laboratories. Present day practice is such that a book of this kind should detail the value of the double coated film, and describe the handling, developing and other technical features of its use. The author entirely avoids the field of roentgen-ray diagnosis and interpretation of shadows, confining the work to the title subject.

GRUNDLAGEN DER OSMOTHERAPIE. Von. Prof. Dr. Karl Stejskal, Physikus und Primarius des Spitales der Barmherzigen Brüder in Wien II. Mit Anhang: Zur Technik der intravenösen Injektion, von Dr. Friedrich Eckhart, Assistent der inneren Abteilung des Spitales der Barmherzigen Brüder in Wien II. Boards. Pp. 215. Vienna: Josef Safár, 1922.

Stejskal has furnished us a diligent outline of what is known about "osmotherapy." Under this heading might be included all those remedial measures that act chiefly by producing osmotic changes. In the widest sense, hypotonic as well as hypertonic measures, local as well as systemic in action, would properly be classified under it. This book, however, deals chiefly with the study of the changes produced by intravenous injection of hypertonic solutions, especially of dextrose, as no other substance can be injected in such dose and concentration. The greater part of the book is occupied with an exhaustive discussion of the theoretical and experimental foundation of this procedure, which is so recent in origin that the first attempts at it date from 1884. Prior to this, hypertonic infusion was considered too dangerous to be employed in the human body. Since then a voluminous literature on the subject has become available, and the limits within which it may be safely practiced, as well as indications for it, have become elaborated. Even though the physical changes following infusion of hypertonic solutions are identical, no matter what substance is injected, the effects differ quantitatively from one another, because of specific properties of the various bodies. Thus, infusion of hypertonic saline or dextrose solution increases the coagulability of the blood, but calcium chlorid solution has a decidedly greater effect in this direction. Salt and dextrose solution are diuretic; but sodium sulphate solution is much more diuretic than these. The second, or practical, part of the book, introduced by a good chapter on the technic of intravenous injection by Friedrich Eckhart, deals with the therapeutic indications. These are classified under the headings of increase in resorption processes; influence on the circulation; diuretic action; influence on secretions; in infectious diseases; sedative effects on the nervous system; effect on lung tissue, and influence on the actions of medicaments, especially general and local anesthetics. The book furnishes a good introduction into a new and possibly rich field; and, by collecting and systematizing the work done in it, clears the way for further advance.

EL MÉTODO OPERATORIO DE LA DERIVACIÓN Urinaria y sus Aplicaciones Terapéuticas. Por el Dr. Pedro Cifuentes, del Hospital de la Princesa. Paper. Pp. 98, with illustrations. Madrid: Editorial "Saturnino Calleja" S. A., 1922.

Urinary derivation is the name coined by the French for the diversion of urine when conditions require that another outlet for this product be furnished, either temporarily to permit the healing of a wound, or permanently in case of incurable injuries or organ removal. In this brief monograph, the subject is succinctly but authoritatively presented as regards history, and various technics and indications, in its chief aspects of nephrostomy, ureterostomy, permanent ureteral catheterization and ureteral transplantation. Some omissions may, however, be noted. In discussing nephrostomy, no mention is made of the possibility of secondary hemorrhages and uremic poisoning, admittedly the great disadvantage of the method. In ureterostomy, the author has overlooked Legueu and Papin's recent recommendations in favor of an opening in the inguinal region, and substitution of a glass device for the rubber catheter. Cifuentes is apparently not familiar with experimental work done in this country on ureteral transplantation through the pancreatic

duct and into the duodenum. Among the indications of cystostomy, he is apparently unacquainted with Lichtenberg's use of the method in urethral stenosis complications. The bibliography is incomplete and not up to date. A number of valuable illustrations, although several of them are not original, throw light on the text.

A TREATISE ON MATERIA MEDICA AND THERAPEUTICS, Including Pharmacy, Dispensing Pharmacology and Administration of Drugs. By the Late Rakhaldas Ghosh. Ninth edition by B. H. Deare, C.I.E., Principal and Professor of Medicine, Medical College of Bengal, and Birendra Nath Ghosh, F.R.F.P.S., Examiner in Pharmacology, University of Calcutta. Cloth. Price, 10 shillings, 6 pence, net. Pp. 712. Calcutta: Hilton & Co., 1922.

"Materia Medica," says the author, "is not an attractive subject; but it must be learned." He has therefore "endeavored to minimize the labor of the student," with what seems doubtful success. The use of small type, close spacing and thin paper makes this apparently small book really a fairly large treatise, and rather difficult to read. It is not likely to become available as a textbook in the United States, because of the exclusive use of the British Pharmacopeia as the standard. Also, characteristic of British provincialism is the exclusive use of the old system of weights and measures. For us, the most valuable portions of the book are probably those which deal with drugs employed by the Hindus. These the author discusses familiarly, and in many cases from personal experience. Information, elsewhere difficult to obtain, is given on such drugs as adhatoda, bael fruit, betel, turpeth, kaladana resin, alstonia, picrorhiza, Indian azadirach, myrobalanum and ispaghula. He also gives the Hindu synonyms for a number of drugs. The book may be recommended especially to those who wish to prepare for medical practice in East India.

ZUR BIOLOGIE DER LIPOIDE MIT BESONDERER BERÜCKSICHTIGUNG IHRER ANTIGENWIRKUNG. Von Privatdozent Dr. Hans Schmidt. Paper Price, 60 cents. Pp. 91. Leipsic: Curt Kabitzsch, 1922.

This monograph constitutes one section of a treatise on "Modern Biology," edited by Prof. Hans Much of "Partigen" fame. Naturally, it constitutes a piece of special pleading for his views as to the importance of lipoids as antigens, with much emphasis on the priority of Much. The text is given by the statement that "today the lipoids play in many respects an even greater rôle in immunity than protein." Evidence supporting this theme is presented; very little of the evidence to the contrary is even suggested. Little of the not inconsiderable work done outside of Mitteleuropa is considered. Nevertheless, what is presented is given well, and it is a good statement of the views of Much and his followers. It is admitted that isolated lipoids have little capacity for immunizing, but lipoid-protein compounds that occur in nature are believed to be highly antigenic, and the assumption is that the chief function of the proteins is to secure the necessary dispersion of the lipoidal particles to which their antigenic capacity is attributed.

LA URETEROPIELOGRAFÍA Y SU IMPORTANCIA CLÍNICA. Por el Dr. Eduardo Ibarra Loring. Jéfe de la Clinica de Vias Urinarias de la Universidad de Chile. Paper. Pp. 123, with 52 illustrations. Santiago, Chile: Imp. y. Lit. "La Ilustracion," 1921.

The author is chief physician at the urologic clinics of the University of Chile and the Salvador Hospital, the most important in Chile. His book is the thesis submitted when he applied for the position of supernumerary professor of urology at the university. It is divided into two parts, the first dealing with the development of pyelography, technic, objections and the normal anatomy of the pelvis and the ureter. The second concerns itself with pelvic, ureteral and renal anomalies and changes which may be shown by pyelograms. The author insists that many objections to pyelography may be obviated with care on the part of the operator. Dr. Ibarra shows knowledge and sense in his discussion of the various points involved, and is not averse to stating how and why he came to his conclusions. The book is profusely illustrated with samples of the author's work, several of which are interesting. Throughout, he used Weld's 25 per cent. sodium bromid solution, considering it far superior to all other pyelographic mediums.

Medicolegal

Good Causes of Action Against Physicians

(Griffin v. Bles et al. (N. Y.), 195 N. Y. Supp. 654)

The Supreme Court of New York, Appellate Division, Third Department, says that one Pearl Griffin was operated on at a hospital and died on the fourth day thereafter. The plaintiff was administratrix of her estate. The defendants were physicians. One of them was the proprietor of and conducted the hospital; another performed the operation, and a third was a consultant. The plaintiff's complaint alleged three causes of action: (1) fraud and deceit, consisting of misrepresentation and concealment of conditions, made and practiced to induce the patient to consent to the operation suggested, by which she was assured of its simplicity and the relief it would accomplish; (2) the operation performed was not the operation suggested to the patient, but was more complicated and dangerous, and was not, therefore, consented to by her, and it amounted to an assault on her; (3) malpractice, which was not questioned. Motions were made to strike from the complaint the first and second causes of action, on the ground that they did not state facts sufficient to constitute a cause of action, it being contended that they did not survive the patient and that an action could not be based thereon. But the court holds otherwise, under the decedent estate law of New York, and affirms an order denying the motions to dismiss the first and second causes of action. The court thinks that the fact that the patient could have maintained an action, if she had lived, on either the first or second cause of action, and death having resulted in connection with the acts complained of, as shown by the allegations, the decision of the lower court was correct. But one judgment for damage could be obtained in this action under any pleading, and allegations setting up the criticized causes of action were necessary to that end.

Mandamus Case of Physician Expelled from Society

(State ex rel. Hyde v. Jackson County Medical Society (Mo.), 243 S. W. R. 341)

The Supreme Court of Missouri, Division No. 1, says that this was a proceeding in mandamus seeking to compel the society to rescind its action in expelling the relator from membership in the society and to restore his name on the roll of members. It appeared that there was a medical library club made up of members of the medical society, and that the relator made application for membership in the club, but his application was refused. He then wrote a letter to one of the members of the club, which he requested to be transmitted to the club. In the letter, he made references to members of the club, and used some obscene expressions. On account of the letter, the medical society instituted proceedings to expel him from the society, but lacked one of the requisite three-fourths majority of votes. The society took an appeal to the state medical society, which directed the county society to expel him. It was unanimously done. These proceedings were then instituted. The circuit court of the county denied the relator a writ of mandamus. He appealed to the Kansas City Court of Appeals, a majority opinion of which reversed the judgment of the circuit court; but one of the justices of the court of appeals wrote a dissenting opinion, which, except as to one paragraph, is adopted by the supreme court in affirming the judgment of the circuit court, the case having been certified to the supreme court for final determination.

In the adopted opinion it is said that, in considering the expediency of the writ of mandamus, the primary question is by no means confined to what the respondent has done to the complaining relator. It may well be said that a thing of equal importance is to ascertain what has been his conduct, as it relates to the matter in controversy. Mandamus, in its exceptional traits, partakes, in some respects, of the nature of equity, in which forum it is a maxim that he who applies for relief by this writ must come with "clean hands," else the law, regardless of merits, will decline to interfere

in his behalf. Yet, unless his misconduct connects with the matter in controversy, he is not to have his prayer denied. But when, as in this case, the misconduct consists in writing an obscene letter referring to, connecting with, and indeed, wholly made up of, the identical matter in controversy, there is no dissent from the proposition that he shall not have relief by mandamus.

Another reason why the writ should be refused was that the relator had not that severable, proprietary interest in the respondent society which was a necessary requisite to his right to relief. It was alleged that the society owned a piece of real estate worth $12,000 and that he paid his dues. But that did not show a right in him sufficient to ground an application for a writ of mandamus. A member of a voluntary association, such as the one before the court, not organized for profit, with no severable, pecuniary interest in the property which it possesses merely as an incident to its existence, has no such pecuniary property right as will justify the extraordinary remedy by mandamus. Otherwise, the court, through that writ, would be called on to test the expulsion of members of churches or social associations. The membership of such associations may change, but it has not been thought that they, their creditors or their heirs, as the case may be, have any interest in the property of the society.

In the majority opinion, it was said: "The evidence shows that membership in the respondent corporation was valuable to the relator in a professional and business way and that the relator has been deprived of his corporate rights, which we think is a pecuniary right as that term is used in the cases." But, scrutinizing the authorities cited, the supreme court finds that *State ex rel.* v. *Georgia Medical Society*, 38 Ga. 608, 611, 626, was the only case which confirmed the proposition enunciated, while, as pointed out in the minority opinion, that case fails to follow the better considered rule that the property right which is violated must be a severable, proprietary right.

Failure of Action Against Automobilist for Fees

(Sheehy v. Nordyke (Ia.), 188 N. W. R. 882)

The Supreme Court of Iowa says that a boy was injured by an automobile driven by the defendant. The plaintiff was the police surgeon of the city in which the accident occurred, and met the defendant and the injured boy at one of the local hospitals. It was the claim of the plaintiff that the defendant requested and employed the plaintiff to give the boy the necessary medical aid and assistance, saying that he "would take care of the expense in the case"; that the plaintiff gave the necessary medical assistance to the boy; that he charged the fee to the defendant, and that, by reason of the medical service rendered, the defendant was indebted to him in the sum of $250, which was the reasonable value of the service. The defendant denied every material allegation in the plaintiff's petition, except that the plaintiff was a qualified physician and surgeon. He also pleaded that the injured boy subsequently to his recovery instituted suit against him, and recovered damages for the injuries received, the judgment including the reasonable value of the medical services performed by the plaintiff. The jury found a verdict for the defendant, and a judgment for costs was entered thereon; which is affirmed.

Evidence, the supreme court goes on to state, was introduced to sustain the allegation of the defendant's answer with respect to the suit for damages; but the trial court, by instruction, removed this defense from the consideration of the jury, and it was instructed to disregard said evidence. It must be presumed that the jury obeyed the admonition of the court.

It was the primary contention of the plaintiff that no fact question was presented by the evidence, and that he was entitled to a directed verdict in the amount stated in his petition. True, he introduced evidence tending to prove that the professional services alleged in his petition were rendered by him, and that the reasonable value thereof was $250. He, however, did not move the court for a directed verdict at any stage of the proceeding, but, after the verdict was returned, finding for the defendant, he filed his motion for judgment, notwithstanding the verdict. There was no defect in the pleadings of the party in whose favor the verdict was returned. The serious claim made by the plaintiff was that the testimony was insufficient to support the verdict; but this question was properly raised on a motion for a new trial, which, as indicated, was not made.

It was clear under the pleadings and the record that a fact question existed for the jury to determine. The reasonable value of the medical services, although unchallenged and undisputed by the evidence, presented a jury question. Neither court nor jury was bound by witness' estimate as to values.

Again, whether or not the plaintiff was the owner of the claim in suit presented a fact question. Another physician, one of the plaintiff's witnesses, testified: "If the bill is paid, I receive a certain amount of it. I am interested in receiving a certain amount from the bill." This showed that it was at least a joint account of the plaintiff and his associate.

The case was properly submitted under correct instructions. The credibility of the witnesses was a matter for the jury. It is quite evident that the jury did not believe that the material allegations of the plaintiff's petition were sustained by a fair preponderance of the evidence. This court can easily understand the disappointment to both the client and his counsel in the outcome of this case, but it finds no legal reason for disturbing the verdict.

Previous Condition of Injured Employee Unimportant

(Springfield District Coal Mining Co. v. Industrial Commission et al. (Ill.), 135 N. E. R. 792)

The Supreme Court of Illinois reverses a judgment which affirmed an award of the industrial commission, under the workmen's compensation act, in favor of a miner, of a certain sum per week for 359 weeks and thereafter a pension of $23.33 a month for life, for injury alleged to have been caused by his having been subjected to bad air in the mine on a certain date. There was evidence that he had been previously affected with miner's asthma, and, according to the court, the most that could be said from the record was that the bad air to which he testified he was subjected in the mine on the date in question might have aggravated his preexisting physical condition, so as to entitle him to compensation for a temporary disability. The evidence furnished no basis for finding to what extent the bad air contributed to the man's incapacity or the relative proportions which the preexisting disease and bad air contributed to the cause of his physical incapacity. The possibility of the bad air being the cause of his condition at the time of the finding was not sufficient to justify such a finding as was made.

Under the decisions, whatever the preexisting physical condition of the applicant for compensation may be, if an accident or condition of the employment is the immediate occasion of the injury, it will be held that the injury arose out of the employment, because it develops within it; that when the exertion or condition of the employment acts on the weakened condition of the employee or on an employee predisposed to suffer injury, in such a way that a personal injury results, the injury must be said to arise out of the employment, if the preexisting condition is accelerated in a material degree by the accident or condition. It has long been held that an employee is entitled, under the workmen's compensation act, to be compensated for every accidental injury in the course of his employment and arising out of the same; that the measure and limit of his right is that the injury sustained is the proximate cause of the incapacity for which compensation is sought; that the previous physical condition of the employee is unimportant, and he may recover for permanent incapacity which results from an accident independently of preexisting disease, but is not entitled to compensation for a condition resulting from a preexisting disease, and not from an injury suffered in the course of the employment and arising out of it; that, if there is a preexisting disease, the employee is entitled to recover for all the consequences attributable to the injury by the acceleration or aggravation of the disease, and that the aggravation or acceleration, permanent and progressive in its nature, would entitle the employee to compensation to the extent and in the proportion in which the preexisting disease is increased.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

December, 1922, **4**, No. 6

*Test of Labor in Relation to Cesarean Section. Comparative Results Obtained by Elective and Secondary Operations Based on Personal Experience of Ninety-Two Cases. R. W. Holmes and A. L. Burdick, Chicago.—p. 579.
*Pregnancy in Tuberculosis. C. C. Norris, Philadelphia, and D. P. Murphy, Rutherfordton, N. C.—p. 597.
*Further Experience with Pituitary Extract in Induction of Labor. B. P. Watson, Toronto.—p. 603.
*Action of Ergot and Solution of Hypophysis on Uterus. C. C. Haskell and M. P. Rucker, Richmond, Va.—p. 608.
Intra-Uterine Rupture of Velamentous Umbilical Cord. G. W. Kosmak, New York.—p. 619.
*Interference Justifiable After Twenty-Four Hours of Labor When No Other Indication is Present. A. C. Beck, Brooklyn.—p. 623.
Rubin Test and Its Therapeutic Application. J. C. Hirst and C. Mazer, Philadelphia.—p. 628.
*Improved Method of Supporting Bladder and Vagina After Vaginal Hysterectomy for Procidentia. A. Heineberg, Philadelphia.—p. 634.
*Postabortal Hemolytic Streptococcemia. P. F. Williams, Philadelphia. —p. 636.
Is Usual Method of Preparing Patients for Delivery Beneficial or Necessary? R. A. Johnston and R. S. Sidall, Baltimore.—p. 645.
*Does Ovum or Corpus Luteum Control Ovarian and Uterine Cycle? H. Schiller, Chicago.—p. 651.

Test of Labor in Relation to Cesarean Section.—A few of the points emphasized by Holmes and Burdick are: Cesarean section is far more dangerous for the woman than spontaneous labor—even an operative delivery of some difficulty. The sum total of discomfort, distress, malaise associated with cesarean section is as great or greater than the inconveniences and pain of labor; one certainly offsets the other. These facts, joined to the increased mortality demand that sections shall be done only for clear indications.

Pregnancy in Tuberculosis.—This paper is based on a study made by Norris and Murphy of 166 cases. The combination of pregnancy and pulmonary tuberculosis is a common one. Pulmonary tuberculosis exerts little or no influence against conception. Pulmonary tuberculosis exerts but little influence on the course of pregnancy, and except in the advanced stages exerts little or no influence toward causing abortion, miscarriage, or premature labor. From 20 to 30 per cent. of mild, quiescent cases of pulmonary tuberculosis and from 70 to 90 per cent. of more advanced cases exhibit exacerbations during pregnancy or the puerperium. Marriage is worse for the tuberculous woman than for the tuberculous man owing to the dangers incident to pregnancy. Unless the pulmonary lesions have been quiescent for a moderately prolonged period, tuberculous women should not marry. Tuberculous women should not become pregnant unless the disease is in the first stage, and has been quiescent for a minimum period of two years. Prior to the fifth month of pregnancy, the uterus should be emptied if the disease manifests any evidence of becoming active. After the fifth month of pregnancy, it is generally advisable to treat these patients expectantly. Infants should not nurse from tuberculous mothers, and should be especially guarded from infection. Hygienic and dietary treatment should be employed at all times. In the great majority of cases the tuberculosis precedes the pregnancy.

Use of Pituitary Extract in Induction of Labor.—In the 195 cases of induction of labor reviewed by Watson in which pituitary extract was used as the inducing agent, 90 per cent. were successful. The maternal mortality was nil. There were no cases of laceration of the cervix and no greater proportion of pelvic floor lacerations than in ordinary labor. There were two cases of retained placenta and two cases of rather severe hemorrhage accompanied by shock following the birth of the placenta. Both the latter women were primiparas over 39 years of age. There were twelve fetal deaths, giving a fetal death rate of just over 6 per cent. Three of these children were monsters. Two died in utero apparently from placental infarction due to pregnancy toxemia. Three died of cerebral hemorrhage, two died of atelectasis within three days of birth and in two a necropsy could not be obtained to ascertain the cause of death.

Action of Ergot and Hypophysis Solution on Uterus.—It can readily be demonstrated by animal experimentation, Haskell and Rucker assert, that the action of ergot and hypophysis solution on the uterus are the same if large enough doses of ergot are used. The action of pituitary preparations is much more powerful than that of ergot. This is readily shown both by experiments on animals and by accurate observations on human beings. The action of both drugs varies greatly with different persons. This is a common clinical experience and is abundantly substantiated by laboratory experiments.

When to Interfere in Prolonged Labor.—Beck advocates conservation in these cases. As soon as the membranes rupture, if the cervix is fully or almost fully dilated, a snug abdominal binder is adjusted and the voluntary efforts are encouraged. It aims to conserve the patient's strength for the second stage. The only additional measure employed by Beck in a prolonged labor is the use of liberal doses of morphin. Whenever the character of the contractions shows that the uterus is fatigued, sufficient morphin is given to stop the labor and allow the patient to sleep. Maternal exhaustion seldom occurred when these long labors were handled in this manner and aside from the anxiety experienced by the attending obstetrician very little added difficulty was observed.

Supporting Bladder and Vagina After Vaginal Hysterectomy.—Heineberg removes the uterus in the usual manner. The broad ligaments are ligated close to the uterus. The uppermost ligature should include the uterine end of the tube and round ligament. If the tubes and ovaries are removed, the infundibulopelvic ligament should be drawn over and its inner end be included in the ligature applied to the uterine end of the round ligament. The upper stumps of the broad ligament thus formed are brought across the median line of the pelvis so that the stump of the left ligament may be sutured to the cut edge of the right vaginal wall and, vice versa, that of the right ligament to the left vaginal wall. The stumps are not brought into the vagina but are inserted into a pocket, external to the upper end of each lateral vaginal wall. The advantages claimed for this crossing of the broad ligaments and attaching each to the vaginal wall of the opposite side are: (*a*) to form a shelf for the bladder; (*b*) to close the opening in the vagina by means of the oblique traction on its walls; (*c*) to prevent dilatation of the vaginal vault and consequent lessening of the support to the base of the bladder.

Postabortal Hemolytic Streptococcemia.—Four cases of postabortal bacteremia, hemolytic streptococcic, with recovery under the use of polyvalent antistreptococcic serum, are recorded by Williams.

Control of Ovarian and Uterine Cycle.—Schiller asserts that corpus luteum extract, as on the market, produces hypertrophy and hyperemia of the uterus and tubes, but only in the presence of ovaries. Theoretically, its greatest therapeutic result ought to be expected in menorrhagia, metrorrhagia and hypoplasia.

American Journal of Physiology, Baltimore

December, 1922, **63**, No. 1

*Relation of Blood Volume to Tissue Nutrition. IV. Effect of Hemorrhage and Subsequent Intravenous Injection of Gum-Saline Solution on Response of Anesthetized Dog to Alternate Administration of Room Air and of Mixture of Carbon Dioxid in Room Air. R. Gesell, C. S. Capp and F. Foote, Berkeley, Calif.—p. 1.
Id. V. Effect of Changes in Blood Volume Elicited by Hemorrhage and Intravenous Injection of Gum-Saline Solution on Total Oxygen Consumption of Anesthetized Dog. R. Gesell, F. Foote and C. S. Capp, Berkeley, Calif.—p. 32.
Studies of Exophthalmic Goiter and Involuntary Nervous System. IV. Vascular Response of Pithed Cat to Single Intravenous Injections of Epinephrin. C. C. Lieb and H. T. Hyman, New York.—p. 60.
Id. V. Vascular Responses of Pithed Cat to Repeated Intravenous Injections of Equal Doses of Epinephrin. C. C. Lieb and H. T. Hyman, New York.—p. 68.

Id. VI. Attempts to Alter Vascular Response of Pithed Cat to Repeated Injections of Similar Doses of Epinephrin. C. C. Lieb and H. T. Hyman, New York.—p. 83.
Id. VII. Mechanism of Sensitization to Subcutaneous Injections of Epinephrin. C. C. Lieb and H. T. Hyman, New York.—p. 88.
*Measurements of Pulse Wave Velocity. H. C. Bazett and N. B. Dreyer, Philadelphia.—p. 94.
Cytolysis and Protoplasmic Structure. I. Resistance Reversal Phenomena in Saponin Hypotonic Cytolysis. I. H. Page and G. H. A. Clowes, Woods Hole, Mass.—p. 117.
*Influence of Various Stimuli on Human Saliva. J. R. McClelland, New Haven, Conn.—p. 127.
Influence of Water Deprivation on Changes in Blood Concentration Induced by Experimental Shock. F. P. Underhill and R. Kapsinow, New Haven, Conn.—p. 142.
Influence of Pituitary Extracts on Absorption of Water from Small Intestine. II. Action of Pituitary Extracts When Introduced into Alimentary Canal. M. H. Rees, Boulder, Colo.—p. 146.
*Studies of Thyroid Apparatus. VIII. On Alleged Exogenous Source of Poisons Giving Rise to Tetania Parathyreopriva. F. S. Hammett, Philadelphia.—p. 151.
Effects on Circulation and Respiration of an Increase in Carbon Dioxid Content of Blood in Man. E. C. Schneider and D. Truesdell, Mitchel Field, L. I., N. Y.—p. 155.

Effect of Hemorrhage on Pulmonary Ventilation.—The results of nine experiments are reported by Gesell et al. They found that the pulmonary ventilation during the administration of carbon dioxid was greater after hemorrhage than during the administration of the same mixture before hemorrhage. The effects of hemorrhage on pulmonary ventilation during the administration of room air varied considerably. In some instances a large hemorrhage had little or no effect on the pulmonary ventilation of room air and in other instances a small hemorrhage markedly increased the ventilation. Injection of gum-saline solution subsequent to hemorrhage decreased the respiratory response to the administration of the carbon dioxid mixture. In those instances in which hemorrhage increased the pulmonary ventilation of room air, the injection of gum-saline solution decreased this ventilation. The changes in the respiratory response elicited by hemorrhage and injection varied with the extent of the changes in blood volume. Hemorrhage and injection which elicited the usual respiratory responses not infrequently were accompanied by no or small alterations in the mean blood pressure.

Measurements of Pulse Wave Velocity.—Measurements of pulse wave velocity made by Bazett and Dreyer showed that the velocity of transmission of the pulse wave is much slower in the large vessels than in the smaller and more peripheral vessels. While a velocity of the pulse wave of about 7 meters a second is confirmed from a comparison of carotid and radial pulses, such a velocity is merely an average between a velocity of about 4 meters a second in the brachial and 8.5 meters a second or more between the elbow and wrist. The velocity of transmission in the carotid, aorta and possibly the femoral artery is of about the same rate as that found for the brachial artery. The rate of transmission is much more variable in the more peripheral parts of the arterial system and is, in all probability, much more dependent on local conditions of vasoconstriction or dilatation.

Influence of Stimuli on Saliva.—McClelland states that human saliva varies in hydrogen-ion concentration, amylolytic index, alkaline and acid reserves, buffer index and mucin content both with different subjects and with the same subject at different times. Therefore, no general conclusion can be drawn as to the response of saliva to any stimulant.

Endogenous Poisons Cause Tetania Parathyreopriva.—Hammett asserts that his studies yield evidence justifying the conclusion that endogenous metabolism, particularly the catabolic phase, is a source of the poisons giving rise to tetania parathyreopriva, and that the statement of Luckhardt and Rosenbloom that "the source of the poisons responsible for tetany is of exogenous origin (particularly the meat of the diet)," fails to express the actual state of affairs.

Annals of Surgery, Philadelphia

December, 1922, **76**, No. 6

*Treatment of Acute and Chronic, Simple, Traumatic Synovitis (Hemarthroses and Hydarthroses) by Repeated Aspirations and Immediate, Active Mobilizations without Splinting. C. A. McWilliams, New York.—p. 677.
*Metastasizing Malignant Tumor of Thyroid. F. L. Meleney, Peking, China.—p. 684.
*Suppurative Osteomyelitis Due to Colon Bacillus. N. Winslow, Baltimore.—p. 695.
Treatment of Chronic Empyema Where Recognized Surgical Procedures Have Failed to Produce Obliteration. W. L. Keller, Washington, D. C.—p. 700.
Chronic Catarrhal Cholecystitis with Lipoid Deposit. J. R. Corkery, Spokane, Wash.—p. 736.
*Aseptic Resection of Intestine. F. K. Collins, Los Angeles.—p. 739.
*Id. C. F. Horine, Baltimore, Md.—p. 745.
*Involvement of Lymph Nodes in Carcinoma of Rectum. J. R. McVay, Rochester, Minn.—p. 755.
*Solid Carcinoma of Ovary. M. R. Hoon, Rochester, Minn.—p. 768.
Double Lip: Surgical Removal. G. M. Dorrance, Philadelphia.—p. 776.
Submaxillary Salivary Calculus: Report of Two Cases. B. F. Busby, Philadelphia.—p. 778.

Treatment of Traumatic Synovitis.—Repeated aspirations combined with active (never passive) motions, and walking without splints, in McWilliams' opinion afford the best method of treatment of acute and chronic, traumatic, joint synovitis, provided there be no joint mouse nor a dislocated meniscus present. He advocates immediate aspiration in all types of traumatic joint effusions as it relieves pain immediately, renders a correct diagnosis more certain, prevents stretching of the ligaments with their consequent weakening, and avoids subsequent muscular atrophy. Such treatment makes unnecessary all other subsequent physiotherapeutic measures, hence its simplicity makes it applicable to all classes of patients. It produces a more perfect cure in one half of the time that is required by the old immobilization method. To leave fluid in a knee (the result of trauma) is just as irrational as to leave fluid in a chest. Aspiration of the knee is a more simple and less dangerous procedure than aspiration of the chest. It can be performed in a doctor's office or in a dispensary, and the patient can be sent home walking immediately thereafter. The effects of physiotherapeutic measures have been overestimated, being used empirically and without foundation. They are makeshifts to excuse procrastination in not applying a radical, curative procedure, such as aspiration.

Metastasizing Tumor of the Thyroid.—Meleney records a case of carcinoma of the thyroid with metastases in the cervical lymph glands. This case is interesting in that the patient was only 17 and the tumor had existed for six years.

Suppurative Osteomyelitis Caused by Colon Bacillus.—Winslow reports a case of osteomyelitis due to an organism which has been but seldom isolated either in pure or mixed culture from the pus of bone abscess. Bacteriologic studies of pus obtained from the abscess showed exclusively the colon bacillus. Though no animal inoculations were made, the organism had all of the cultural and morphologic characteristics of *B. coli*. Whether the bone infection had any connection with an attack of typhoid twenty years previously or not is open to doubt, but the association of the colon bacillus with an osteomyelitis is of clinical interest.

Aseptic Resection of Intestine.—The success of Collins' operation depends on the proper application of a looped ligature, a single slip knot, of strong linen or silk, holding the ends of the intestine until such a moment as the end to end anastomosis is completed, when by a gentle pull this looped ligature is removed, fully opening the lumen of the intestine. It is said that the method can be applied to any portion of the intestinal tract except the lower rectum, and permit of the removal of any number of inches or feet. No handling of the remaining intestine, through its lumen or externally, is required. All of the advantages of an end to end anastomosis are gotten without contamination.

Aseptic Resection of Intestine.—Horine also describes a method of blind end to end anastomosis with the release of a purse string suture after the anastomosis is completed.

Involvement of Lymph Nodes in Cancer of Rectum.—One hundred specimens were studied by McVay. From these specimens 623 glands were obtained. Fifty-three per cent. of the specimens did not show glandular involvement; 30 per cent. showed slight glandular involvement, and 17 per cent. showed marked glandular involvement.

Solid Carcinoma of Ovary.—Thirty-seven cases of solid carcinoma and two cases of solid sarcoma of the ovaries were found in the examination of malignant tumors of the ovary at the Mayo Clinic between Jan. 1, 1910, and Aug. 1,

1921. These tumors were solid throughout or contained only relatively small cysts, due to degeneration and necrosis or retention. During this time 4,175 tumors of the ovary were removed. Thus, solid malignant tumors comprise 0.93 per cent. of all ovarian tumors. During the same period 540 malignant ovarian tumors were removed; of these 0.086 per cent. were solid. In 66 per cent. of the cases the tumor was unilateral. The general history is similar to that of ovarian fibroma with the additional symptoms of malignancy, loss of weight, strength and appetite, and secondary anemia. The growth of the tumor is usually rapid. Ascites cannot be considered a criterion of malignancy, as it was present in 35 per cent. of the solid carcinomas and in 25 per cent. of the benign fibromas. The treatment of solid carcinoma of the ovary is surgical removal followed by the use of the roentgen ray and radium, if total removal of malignant tissue is impossible. Metastasis and local recurrence indicate a hopeless prognosis, but palliative treatment may be given by radium and the roentgen ray.

Boston Medical and Surgical Journal

Jan. 4, 1923, **188**, No. 1

Progress of Mouth Hygiene Movement. W. R. Woodbury, Rochester, N. Y.—p. 1.
*Nutrition and Growth in Children. W. R. P. Emerson, Boston.—p. 8.
*Osteomalacia: Etiology and Report of Case Occurring in an Imbecile with Psychosis. N. A. Dayton, Wrentham, Mass.—p. 10.
Case of Subcutaneous Emphysema Due to Pneumatic Rupture of Rectum. P. J. Finnegan, Salem, Mass.—p. 15.
*Cesarean Section in Presence of Double Pneumonia. Report of Case. W. C. Seelye, Worcester, Mass.—p. 16.

Nutrition and Growth in Children.—The forces affecting the child's health, which in Emerson's opinion must be coordinated to insure success, are: the home; the school and other agencies; medical care; and the child's own interest. The program, in summary consists of (1) weighing and measuring as a means of identification; (2) diagnosis based on complete physical growth, mental and social examinations; (3) removal of physical defects as a prerequisite for successful treatment; (4) measured feeding (forty-eight hour diet record); (5) midmorning and midafternoon lunches; (6) midmorning and midafternoon rest periods; (7) regulation of physical, mental and social activities to prevent overfatigue (forty-eight hour list of activities); (8) nutrition classes for the treatment of malnutrition; (9) nutrition or diagnostic clinics for problem cases; average weight for height as a minimum standard of nutrition and growth.

Osteomalacia in Imbecile with Psychosis.—Dayton cites the case of a woman, aged 36 (mental age about 7) who always had been peculiar and who had to be cared for throughout her life "like a child of 3." She attended school until 10 years of age, but made no progress. The psychosis was gradual in onset, dating from several months before admission, but a notable point was the rapidity of mental and physical deterioration from the onset of the psychosis. During her stay of about seven years in the institution, twenty-nine casualty reports were recorded. Twenty-two of these were minor injuries, the result of falls without apparent cause. That is, the patient fell because of inability to manage the lower extremities rather than from an impediment. Gross changes in the bony skeleton were noted, and a fracture of the left tibia and fibula confined the patient to bed. The patient died soon afterward. A necropsy was held and the findings are reported by Dayton. The bone changes were those of osteomalacia. The ovaries were interesting. They were considered as fibrotic ovaries with degenerated follicles, refuting the theory that osteomalacia is due to hyperactivity of the ovaries.

Cesarean Section in Case of Double Pneumonia.—When Seelye's patient was admitted to the hospital she was at full term of her third pregnancy and already a few hours in labor. She was acutely ill with double pneumonia of the influenza epidemic type. It was evident from her condition on admission, together with her previous history, that she could not survive normal labor. The baby was large, with overriding at the symphysis. The choice, therefore, lay between a rapid destructive delivery, and cesarean section. The latter course was considered the quicker and to give less shock. It was decided to operate entirely under local anesthesia, 0.12 per cent. cocain. The operation was performed without any difficulty or delay, but the baby was dead on delivery. It was evident from its condition that it had been dead in utero for about twenty-four hours, and that death was probably due to the profound toxemia of the mother. The patient made a complete recovery after a convalescence lasting several months.

Georgia Medical Association Journal, Atlanta

December, 1922, **11**, No. 12

Present Status of Surgery and Hospitals in South Georgia. A. D. Little, Thomasville.—p. 471.
Lord Lister and His Priceless Gift to Man. J. A. Hunnicutt, Jr., Athens.—p. 473.
Blood Pressure; Case Reports. J. W. Simmons, Brunswick.—p. 475.
Focal Infection; Report of Cases. C. Thompson, Millen.—p. 479.
Principles Underlying Management of Osteomyelitis. M. Harbin, Rome.—p. 484.

Iowa State Medical Society Journal, Des Moines

December, 1922, **12**, No. 11

Injuries to Spine Not Involving Cord. O. J. Fay, Des Moines.—p. 481.
Vertebral Fractures with Cord Involvement. J. W. Martin, Des Moines.—p. 184.
Tumors of Breast from Standpoint of General Practitioner and General Surgeon. A. D. Bevan, Chicago.—p. 489.
Program of American College of Surgeons. F. Martin, Chicago.—p. 496.
Ethics in Fractures. F. A. Hennessey, Calmar.—p. 498.
Mistakes in Treatment of Fractures. H. L. Beye, Iowa City.—p. 500.
Laboratory Practice of Medicine. H. E. Robertson, Rochester, Minn.—p. 503.

Journal of Experimental Medicine, Baltimore

December, 1922, **36**, No. 6

*Studies on Endothelial Reactions. VI. Endothelial Response in Experimental Tuberculous Meningo-encephalitis. N. C. Foot, Boston.—p. 607.
*Spirocheta Eurygyrata. M. J. Hogue, Baltimore.—p. 617.
*Insusceptibility to Sensitization and Anaphylactic Shock. W. T. Longcope, New York.—p. 627.
Leukocytic Secretions. A. Carrel and A. H. Ebeling, New York.—p. 645.
*Loss of Circulating Erythrocytes in Certain Types of Experimental Pneumonia. C. D. Leake and T. K. Brown, Madison, Wis.—p. 661.
Supravital Staining of Vaccine Bodies. E. V. Cowdry, New York.—p. 667.
*Experimental Studies of Nasopharyngeal Secretions from Influenza Patients. X. Immunizing Effects in Rabbits of Subcutaneous Injections of Killed Cultures of Bacterium Pneumosintes. P. K. Olitsky and F. L. Gates, New York.—p. 685.
Studies on Disease of Guinea-Pigs Due to Bacillus Abortus. W. A. Hagan, Princeton, N. J.—p. 697.
Value of Heat Killed Cultures for Prevention of Bacillus Abortus Inoculation Disease of Guinea-Pigs. W. A. Hagan, Princeton, N. J.—p. 711.
Susceptibility of Mice and Rats to Infection with Bacillus Abortus. W. A. Hagan, Princeton, N. J.—p. 727.
*Action of Sodium Salicylate on Formation of Immune Bodies. H. F. Swift, New York.—p. 735.

Endothelial Response in Experimental Tuberculous Meningo-Encephalitis.—Foot asserts that experimental cerebral and meningeal tubercles in the rabbit are formed from cells of endothelial origin. These cells are derived apparently from other sources than the neighboring capillary endothelium alone. The circulating macrophages, which, in this case, are capable of multiplying by mitosis while still free in the blood, are drawn on in the formation of the cerebral tubercle. Splenectomy has not materially decreased the available supply of circulating macrophages in this experiment. While these cells may originate in the endothelium of the liver and bone marrow, the lung appears to play a much more important rôle in this respect than has been hitherto suspected.

Diarrhea Caused by Spirochaeta Eurygyrata.—The patient from whom Hogue obtained the material containing *Spirochaeta eurygyrata* was a woman who had been suffering with chronic diarrhea for thirteen years. All attempts to control it failed. There was a triple infection of *Chilomastix mesnili, Trichomonas hominis,* and *Spirochaeta eurygyrata.* Pure strains of *Spirochaeta eurygyrata* were isolated and cultivated. They lived longest in a medium which was made up of sodium chlorid and pig serum water. They stained readily with iron-hematoxylin, Giemsa's stain, Cross' stain and carbolfuchsin. They did not stain with the vital dyes used. Cats were fed cultures of *Spirochaeta eurygyrata* but did not become infected with them.

Insusceptibility to Sensitization.—Attempts to produce anaphylactic shock in white rats by second intravenous or subdural injections of horse serum failed. It was impossible to demonstrate either by skin reactions or by the uterine reaction that white rats can be sensitized to horse serum. It was not possible to sensitize guinea-pigs passively with the serum of white rats presumably immunized to horse serum. In spite of the fact that the white rat could not be made anaphylactic to horse serum, the tissue of the animal reacted with the horse serum to form precipitins in fair concentration and the antigen disappeared from the circulation soon after the precipitins reached their greatest concentration in the blood. These experiments would indicate that in the white rat anaphylaxis and precipitin formation are independent and represent different types of immunologic processes.

Erythrocytes in Experimental Pneumonia.—Erythrocyte counts, blood volume, hemoglobin and hematocrit determinations on a series of dogs suffering from experimental pneumonia induced by the tracheal insufflation of *Bacillus bronchisepticus* and *Bacillus mucosus-capsulatus* indicate that in this condition there is an actual loss of circulating erythrocytes, without compensatory regeneration. Postmortem examination of the organs of these animals revealed red cells in various stages of degeneration in the capillaries and tissue spaces of the lungs, liver, spleen and intestinal walls.

Experimental Studies with Bacterium Pneumosintes.—A series of rabbits was subcutaneously injected by Olitsky and Gates with three measured doses of killed cultures of two strains of *Bacterium pneumosintes* derived from the nasopharyngeal secretions of influenza patients. These rabbits were subsequently tested for the development of serum antibodies and for the presence of an induced immunity to the living organisms. The serum of eleven of fifteen rabbits, tested from ten to twenty-seven days after the final subcutaneous injection, specifically agglutinated *B. pneumosintes*, whereas normal rabbit serum did not. Nineteen vaccinated rabbits were subjected to protection experiments. Two of them were unaffected by an intratracheal injection of *B. pneumosintes*, contained in the lung tissues of previously infected animals, in a dose which typically affected the control rabbits. Fifteen of the other seventeen proved to be completely resistant when tested by intratracheal injections of *B. pneumosintes* cultures that produced typical infections in the controls. Ten of these fifteen rabbits were injected intravenously with living cultures of pneumococcus, *Streptococcus hemolyticus*, or *Bacillus pfeifferi* in doses which were noninfective under normal conditions, but infective, as experience has shown, in the presence of a primary lesion caused by *B. pneumosintes*. In none of these animals did infection develop. The two remaining rabbits of the seventeen were not protected against *B. pneumosintes* by the vaccination, and they further developed a secondary pulmonary infection with *B. pfeifferi* after its intravenous injection. Control rabbits similarly injected intratracheally with *B. pneumosintes*, and then intravenously with the pneumococcus, streptococcus, or *B. pfeifferi* in doses that had proved noninfective for normal rabbits, uniformly developed a secondary infection with these organisms. The mildness of the local reactions and the absence of general signs, following vaccination with *B. pneumosintes*, the authors assert, indicate that similar injections would be well tolerated in man. There is no evidence that the subcutaneous injection of large doses of the heat killed organisms reduces the resistance of the animal body to infections with other bacteria. In single rabbit experiments the resistance to intravenously injected pneumococci, streptococci, or *B. pfeifferi* has been found unreduced immediately after vaccination with *B. pneumosintes*.

Action of Sodium Salicylate on Formation of Immune Bodies.—Rabbits treated with sodium salicylate, in daily doses of from 0.16 to 0.2 gm. per kilogram of body weight and at the same time immunized with intravenous injections of *Streptococcus viridans*, both living and in the form of vaccines, and also with washed sheep red blood cells, showed diminished complement fixing antibodies, agglutinins and hemolysins when compared with controls similarly immunized. If the antigens were treated with sodium salicylate in vitro and subsequently injected intravenously into rabbits, the animals usually showed lower antibody curves than did rabbits that received the untreated antigen intravenously and sodium salicylate by stomach tube. Therefore, Swift is of the opinion that the beneficial effect of sodium salicylate in rheumatic fever patients probably cannot be attributed to an increased production of circulating immune bodies against the infectious agent. This is, however, no contraindication to the administration of salicylates to patients suffering from infectious diseases.

Laryngoscope, St. Louis

December, 1922, **32**, No. 12

Hare-Lip and Cleft Palate. M. N. Federspiel, Milwaukee.—p. 909.
Pulmonary Aspects of Tonsillectomy Under General Anesthesia. M. C. Myerson, Brooklyn.—p. 929.
Some Physical Intranasal Conditions Favoring Involvement of Nasal Accessory Sinuses. M. Metzenbaum, Cleveland.—p. 943.
Bronchoscopic Tack and Pin Forceps. G. Tucker, Philadelphia.—p. 948.
Investigation of Nystagmus Arc in Case of Congenital Nystagmus. H. H. Vail, Cincinnati.—p. 952.
Intratracheal Abscess. C. A. Campbell, Steubenville, Ohio.—p. 955.
Tonsil Enucleator. D. H. Jones, New York.—p. 956.
Personal Experiences of Some Details of Older Otology. J. Dundas-Grant, London.—p. 958.
Observations After Six Years of Constant Use of Sluder Method for Tonsillectomy. E. J. Stein, Lancaster, Pa.—p. 961.
Case of Bilateral Frontal Sinus Empyema, Subdural and Subperiosteal Abscess with Recovery. M. B. Waltz, Fort Smith, Ark.—p. 966.

Maine Medical Association Journal, Portland

December, 1922, **13**, No. 5

Vital Statistics. C. F. Kendall, Augusta.—p. 119.
Cross Fire in Roentgen-Ray and Radium Treatment of Malignant Disease. R. B. Josselyn, Portland.—p. 128.

Michigan State Medical Society Journal, Grand Rapids

January, 1923, **22**, No. 1

*Relation of Diet to Development of Dental Caries. G. L. Bliss, Kalamazoo.—p. 1.
Rôle of Acidified Milk in Infant Feeding. R. M. Greenthal, Milwaukee, Wis.—p. 9.
*Simple, Practical Method for Feeding of Infants. D. M. Cowie, Ann Arbor.—p. 10.
Treatment of Alimentary Intoxication and Report of Cases. E. W. May, Detroit.—p. 14.
Feeding of Infants and Children. B. R. Hoobler, Detroit.—p. 16.
Causative Factor of Vessel Compression in Upper Urinary Obstruction. G. C. Burr, Detroit.—p. 21.
Lethargic Encephalitis: Study of Ten Cases. S. Wilson and F. A. Weiser, Detroit.—p. 24.
Advancement of Medicine in Detroit. J. E. Davis, Detroit.—p. 27.
Nontuberculous Infections of Kidney. F. H. Cole, Detroit.—p. 32.
Mental and Behavior Changes in Children Following Encephalitis. H. T. Clay, Grand Rapids.—p. 37.

Relation of Diet to Development of Dental Caries.—The various phases of this problem as they are presented in man and in animals, naturally and experimentally, are discussed by Bliss as proof that the various diseases to which mankind is prey are due to deficiencies in the various articles of diet. He concludes by stating that a man living on cereals, meat, potatoes and fruit is not on a balanced ration. Physicians should avoid fads, patent vitamin foods and tablets, predigested foods and extremes of all kinds. If they will apply as much ingenuity and thought to dietetics as they do to the mechanical phase of dentistry and medicine, they will cure one defect which hastens the deterioration of civilization.

Simple Method for Feeding Infants.—Cowie states that the normal infant requires 45 calories per pound, or 100 calories per kilogram, body weight to maintain its weight. After determining on one ounce of sugar as a constant factor, and accepting all sugars as containing 120 calories per ounce, it became a very simple problem to know how much milk was necessary for the balance of the daily food. For example, if an infant weighed 10 pounds, he would require 10 times 45, minus 120, which equals 330, or the number of calories that must come from milk. If there are 21 calories in an ounce of milk (4 per cent. milk), 330 divided by 21 equals 15½ ounces, the amount of milk necessary to balance the energy requirement. The rest of the formula is made up with water. A chart illustrates how an infant can be fed up to the end of the first year with milk, sugar and water, although in the actual handling of a case vegetables and cereals are necessary after the eighth month.

Ohio State Medical Journal, Columbus

January, 1923, **19**, No. 1

*Carcinoma of Colon. G. W. Crile, Cleveland.—p. 5.
Carcinoma of Colon. J. Phillips, Cleveland.—p. 7.
*Treatment of Hyperemesis Gravidarum. W. D. Inglis, Columbus.—p. 11.
Spinal Therapy in Syphilis. J. G. Marthens, Dayton.—p. 14.
Nature and Extent of Surgical Intervention in Acute Nasal Accessory Cavity Suppuration. J. E. Brown, Columbus.—p. 16.
Etiology and Treatment of Maxillary Sinusitis. H. V. Dutrow, Dayton.—p. 18.
*Protein Sensitization and Its Relationship to Focal Infection. J. J. Coons, Columbus.—p. 21.
Contagium Vivum. R. H. Grube, Xenia.—p. 26.
*Physician and Tuberculosis Clinic. J. A. Frank, Columbus.—p. 29.

Treatment of Cancer of Colon.—Short circuiting the fecal stream to exclude the field of operation; the two stage operation; the iodoform gauze pack to prevent contamination of raw surfaces and to protect the retroperitoneal space against infection; wide resection of the cancer and use of radium and deep roentgen-ray therapy to prevent recurrences, are the leading features of the plan by which Crile and his associates have performed 389 operations on the large intestine and rectum for cancer, including a personal series of 117 operations, of which eighty-seven, including thirty-nine radical operations, have been done with only two deaths.

Treatment of Vomiting of Pregnancy.—Inglis places all patients with this condition in favorable hospital surroundings, and withholds food and water until vomiting has ceased for from eighteen to twenty-four hours. Stomach lavage and enemas of sodium bicarbonate solution are used as indicated, as well as rectal feeding. He states that patients improve more quickly and suffer less if they are kept in a slightly somnolent condition, so sedatives are pushed. Unless a marked improvement is apparent in a few days, Inglis dilates and packs the cervix and lower segment of the uterus with gauze and completes the termination of pregnancy the following day under light gas-oxygen anesthesia, if necessary.

Protein Sensitization and Focal Infection.—Coons believes it entirely rational to regard nasal infections, adenoids, infected sinuses, catarrhal conditions and infections in general as being the primary cause of such related conditions as bronchitis, asthma, hay fever, angioneurotic edema, the eczemas, urticaria and certain gastro-intestinal manifestations; or they may act secondarily by lowering the resistance of the patient to other infections. After eliminating all foci of infection, Coons believes that the rôle of protein sensitization in diagnosis reaches its maximum value and stands as the last step in the complete study of the case.

Physician and Tuberculosis Clinic.—Frank is chief of the bureau of tuberculosis of the Ohio State Department of Health. He gives a summary of the activities of this bureau to date. Eighteen clinics have been held, to which patients have been admitted from forty health districts. All told, 1,145 persons have been examined, of whom 324 have been found positive, 189 suspected, and 632 negative. From preliminary reports, approximately 238 persons with positive and suspected tuberculosis are being treated by their physicians. Physicians have examined about 288 contacts in families, in which there are known or suspected cases of tuberculosis. The clinics have been visited by 205 physicians and 213 county officials, members of boards of health, nurses and others interested in public health activities. Medical society meetings have been attended by 268 physicians and 273 others. The organization nurse has visited 462 physicians, 197 public officials, school superintendents and others. This work has been carried out by the chief of the bureau, one organization nurse and one clinic nurse, together with the indispensable services of the diagnosticians for the sum of $6,100. This includes equipment, salary and traveling expenses of the department's personnel since Oct. 1, 1921, and traveling expenses of diagnosticians.

Rhode Island Medical Journal, Providence

January, 1923, **6**, No. 1

Lung Abscess Following Tonsillectomy. F. N. Bigelow, Providence.—p. 1.
Chronic Empyema and Its Treatment. F. V. Hussey, Providence.—p. 6.
*Dermatitis Medicamentosa (Mercury). H. P. B. Jordan.—p. 13.

Mercuric Dermatitis.—Jordan reports the case of a man who had a pustular eruption covering the body, excepting the face, back and posterior aspect of lower extremities and the feet. The chest, arms, legs and abdomen were entirely covered with a confluent pustular eruption, the eruption on the penis, scrotum, groins and axillae being of the bullous type. Two days previously the patient had applied blue ointment freely to the chest, abdomen, groin, axillae and penis, and less freely to the lower extremities, to cure pediculosis pubis. On arising the following morning he noticed an eruption which was sore to touch. It became steadily worse. The man became extremely prostrated and remained in this condition for eight days. Recovery was accompanied by profuse desquamation confined to the areas of inflammation. He was discharged well on the twenty-sixth day. The patient at no time showed any of the ordinary symptoms of mercurial poisoning.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

December, 1922, **3**, No. 6

*New Medium for Isolation of Diphtheria Bacillus. S. R. Douglas.—p. 263.
*Nonspecific Desensitization. C. H. Kellaway and S. J. Cowell.—p. 268.
*Occurrence of Toxic Substance in Blood in Cases of Bronchial Asthma, Urticaria, Epilepsy and Migraine. W. Storm van Leeuwen and Zeydner.—p. 282.
Application of Absorption of Agglutinin Test to Serologic Study of Pneumococci. R. R. Armstrong.—p. 287.
Influence of Quality of Meat Used on Reaction Curve of Nutrient Medium. C. G. L. Wolf.—p. 295.
*Vitamin Underfeeding. W. Cramer.—p. 298.
Laboratory Preparation of Purified Hematoxylin. A. H. Drew.—p. 307.

Medium for Isolation of Diphtheria Bacillus.—The medium used by Douglas consists of agar and serum, of which the antitryptic action is neutralized, together with potassium tellurite as an indicator

Nonspecific Desensitization.—Kellaway and Cowell assert that the intravenous injection of normal guinea-pig serum into actively sensitive guinea-pigs causes a degree of protection against the specific antigen which is only of short duration. This loss and subsequent return of the sensitiveness of the anaphylactic animal is explained by parallel changes in the sensitiveness of the plain muscle. The changes in the sensitiveness of the plain muscle are probably due to physical changes occurring in the muscle cells. The demonstrable antibody of the serum is greatly diminished in amount very soon after the injection of serum, and is not restored till long after the sensitiveness of the plain muscle has returned to its original value. The injection of guinea-pig serum into guinea-pigs with a high titer of circulating antibody is followed by the appearance of enhanced sensitiveness of the whole animal during two periods—one shortly after the injection and a second after the restoration of the sensitiveness of the plain muscle but before the return to normal of the demonstrable circulating antibody.

Toxic Substances in Blood in Asthma, Urticaria, Epilepsy and Migraine.—In this study by van Leeuwen and Zeydner, blood drawn from a vein was at once mixed with alcohol, the alcoholic extract was evaporated and the residue taken up with saline solution. The effect of the extract on loops of isolated cat's intestine was tested. Normal blood extracts had no effect, but extracts made from the blood of patients suffering from asthma, urticaria, migraine and epilepsy caused contraction comparable with that produced by pilocarpin (equal to from 1 to 5 mg. pilocarpin per liter of blood). It is suggested that this toxic substance is related to the allergic disposition.

Vitamin Underfeeding.—Observations have been made by Cramer on a stock of rats which have been kept through many generations on a natural diet, the vitamin content of which, though restricted, is adequate to enable them to grow and breed and to prevent the occurrence of obvious ill health. A comparison of rats from these stocks with animals from a stock fed on the same diet supplemented with an abundant sup-

ply of vitamins shows that there is such a condition as "vitamin underfeeding" and that it may occur on a natural diet. Such vitamin underfeeding does not lead to any obvious ill health: the animals are in appearance normal, healthy animals. But vitamin underfeeding, especially if it has occurred in infancy, impresses itself on the organism as a lasting weakness which only manifests itself when the organism is exposed to a strain. Hence the importance of insuring an abundant supply of vitamins in the food, especially to the pregnant and lactating mother and to the growing child. The fact that vitamins have a positive, stimulating druglike action and thus act as food hormones is put forward to replace the present conception of their mode of action. These conclusions suggest that the physical make-up of a community is determined largely by the ease and regularity with which an abundant supply of vitamins is secured to the pregnant and nursing mother and to the growing child.

Journal of Tropical Medicine and Hygiene, London

December, 1922, **25**, No. 23

Case of Human Infection with Eimeria Oxyspora, Dobell, 1919. J. G. Thomson and A. Robertson.—p. 369.
New Genus Alofia of Family Linguatulidae. Anatomic Account of A. Ginae. G. Giglioli.—p. 371.
*Case of Blackwater Fever Complicated by Retinal Hemorrhage. R. E. W. Connell.—p. 378.

Retinal Hemorrhage Complicating Blackwater Fever.—Connell's patient developed a severe attack of estivo-autumnal fever, during which the blood showed numerous parasites, often two in one erythrocyte. A week later he was found to have blackwater fever. On the fifth day of this illness the man complained that there was a dark spot in the center of the eye, which at 8 feet distance was found to cover a roughly circular area 6 inches in diameter. A paracentral hemorrhage was detected. The condition gradually receded and after two months the eyes were still weak and spots were seen at times, one of which in each eye, paracentrally placed, was somewhat persistent.

Medical Journal of Australia, Sydney

Nov. 25, 1922, **2**, No. 22

General Principles in Psychotherapy. L. P. Lowson.—p. 603.
*Dysentery Bacilli of Sonné Type. S. W. Patterson and F. E. Williams.—p. 608.
Practice of Medicine in Imaginary City of Utopiaville. E. Sirois.—p. 610.
Some Dislocated Lenses. J. L. Gibson.—p. 615.

Dysentery Bacilli of Sonne Type in Colitis.—Patterson and Williams have found in cases of colitis occurring in Australia, examples of a bacillus which constitutes a third group of dysentery bacilli, other than the Shiga and Flexner-Y groups. It is pathogenic for man and animals. Bacteriologically, it is easily confused with dysentery bacilli of the Flexner-Y type, but it is a slow fermenter of lactose. It is agglutinated in low dilution by Flexner-Y agglutinating serum and up to a dilution of 1:1,600 with a polyvalent dysentery serum which is made with an antigen containing representatives of this group. In a series of observations of normal persons and diarrheic patients, the authors found that agglutination of the patient's serum with this bacillus at a dilution of 1:100 or more may mean that the patient is showing a specific response to that organism.

Practitioner, London

December, 1922, **109**, No. 6

Prescience in Tuberculosis: Bearings on Treatment. R. Philip.—p. 415.
Mental Aspects of Tuberculosis. O. M. Holden.—p. 418.
*Cerebral and Cerebellar Hemorrhages in Apparently Healthy Adolescents and Children. C. O. Hawthorne.—p. 425.
Auricular Fibrillation. A. J. S. Pinchin.—p. 436.
Treatment of Indigestion. J. Taylor.—p. 447.
Reconstructive Surgery. G. R. Girdlestone.—p. 456.
Perils from Perishing Parasites. F. G. Cawston.—p. 460.
Value of Rectal Feeding in Illness. A. E. Rouse.—p. 463.

Intracranial Hemorrhage in Apparently Healthy Adolescents.—Hawthorne records two examples of swift and sudden death from intracranial hemorrhage in two boys, aged 17 and 14 years, respectively; each was regarded, until the day of his death, as in good and even vigorous health, and neither case was there any history or evidence of violence. In one case there was a considerable hemorrhage deep in the substance of the midcerebellum but no sign of injury and no other evidence of disease. In the other case there was a large hemorrhage in the left frontal lobe and both lateral ventricles were full of blood.

South African Medical Record, Capetown

Nov. 25, 1922, **20**, No. 22

Sterility. E. R. Snyman, Kroonstad.—p. 430.
*Filter Passing Micro-organism Associated with Epidemic Influenza. S. Lister.—p. 434.

Bacteriologic Study of Influenza.—The nasopharyngeal washings from fifteen cases of influenza obtained in eleven instances within twenty-four hours of the onset of the disease were studied bacteriologically by Lister. After a period of from six to eight days minute bodies were observed from some of the tubes inoculated with the filtrates from five out of the fifteen cases under investigation; in some specimens these bodies were present in enormous numbers. They are minute, measuring about 0.15 microns and are uniform in size; they stain a deep blue, and give a peculiar impression of "hardness"; under a magnification of 1,000 they resemble pin points. They usually occur singly, but chains are sometimes present composed of from three to five individuals. Lister has succeeded in subculturing them to the fourth generation both by direct subculture and by the subculture of filtrates from positive cultures. These organisms correspond with those described by Olitsky and Gates. A preliminary attempt was made to infect human beings with this organism. The experiment was carried out on eighteen natives and on the author. Seven subjects received the filtrate, six the unaltered culture and six received the heated culture. Of the nineteen volunteers only one complained of any discomfort; he was in the unaltered culture group and had a typical attack of uncomplicated influenza, beginning nineteen hours after the spraying. The minute bodies were observed in smears of his nasal secretion. A nasal washing was taken and filtered through a Berkefeld candle, the filtrate being planted into Smith-Noguchi medium. Five days later a profuse growth of this minute organism had developed.

Tubercle, London

December, 1922, **4**, No. 3

*Position of Colony in Tuberculosis Campaign. S. Tinker.—p. 97.
Two Manometers in Apparatus for Inducing Artificial Pneumothorax. W. P. Morgan.—p. 104.
*Tuberculosis as Deficiency Disease. V. F. Soothill.—p. 108.
Duration of Sanatorium Treatment. R. C. Macfie.—p. 111.

Position of Colony in Tuberculosis Campaign.—The growing tendency to discredit the colony as a method of obtaining the desired permanent welfare of the tuberculous working man is controverted by Tinker. In his opinion the colony offers a period of extended treatment, each month of which reduces materially the danger of relapse. It is a stepping stone between sanatorium and home. The author emphasizes that the colony must not be an isolated institution, but must work in harmony with the public health authorities and find its appointed place in the whole problem. Some form of protection is necessary after colony treatment is completed. The municipal workshop offers the possibility of this protected labor in a large number of cases; in rural areas a cooperative system of marketing the goods made by patients in their own homes is essential. The village settlement offers but limited help, and although a method of dealing with individual cases (i. e., the very infective), it is too expensive to be of material assistance in the whole problem. Industrial colony life reestablishes the mental as well as the physical well being of patients, fostering initiative and bringing the ment out of the hopeless attitude which continuous unemployment has caused. Although initial results may be small, they will increase with time and experience.

Tuberculosis a Deficiency Disease.—It is suggested by Soothill that future generations might be better protected through increasing individual resistance by an abundant supply of fat soluble vitamin to the developing child, before and after birth.

Bulletins de la Société Médicale des Hôpitaux, Paris

Dec. 1, 1922, **46**, No. 34

*Diagnosis of Addison's Disease. A. Sézary.—p. 1572.
*Intravenous Infusion by Drip Method. J. Thiroloix.—p. 1575.
*Addison's Disease and Pigmentary Cirrhosis. C. and J. Oddo.—p. 1578.
*Gangrene of Hepatic Flexure in Amebic Dysentery. E. Lenoble and Y. Jegat.—p. 1582.
*Acute Scleroderma. Laignel-Lavastine et al.—p. 1586.
Chronic Multiple Synovitis of Tendons. R. A. Gutmann.—p. 1590.
*Contagiousness of Whooping-Cough. H. Barbier and Renard.—p. 1592.
Multiple Spontaneous Perforation of Lung. Terris.—p. 1595.
*Sympathicotonia in Tachycardia. Gilbert and Coury.—p. 1596.
Cutaneous Leishmaniasis. Plessier.—p. 1609.
*Cervical Myotonia in Nurslings. G. Variot.—p. 1613.
Familial Myoclonic Epilepsy. Crouzon et al.—p. 1620.
*Kala-Azar in France. J. Renault et al.—p. 1624.
Chronic Syphilitic Arthropathy and Vitiligo. Brouardel et al.—p. 1632.
*Red Thyroid Spot. G. Marañon.—p. 1635.

Diagnosis of Addison's Disease.—Sézary believes that even the simultaneous presence of asthenia, arterial hypotension, Sergent's white line, pigmentation of skin and mucous membranes, does not always point to Addison's affection of the suprarenal capsules. Asthenia, if evidenced by a rapidly increasing fatigue of muscles during work, is the most important finding. Yet even this sign is present in myasthenia gravis and perhaps in some other conditions.

Intravenous Infusion.—Thiroloix demonstrates an apparatus ("rheostill"), by means of which very slow intravenous injections of large quantities of fluid can be made. The injection may be fractioned and this may prevent anaphylaxis if the first pause lasts five minutes.

Addison's Disease and Pigmentary Cirrhosis.—Oddo and Oddo report two cases of a combination of Addison's disease with pigmentary cirrhosis (one of them without diabetes) with anatomic findings.

Gangrene of Hepatic Flexure in Amebic Dysentery.—Lenoble and Jegat publish a case of amebic dysentery leading to death in spite of emetin treatment. The patient had ascites, edema, no fever, a positive Wassermann reaction. The clinical diagnosis was: chronic peritonitis after atrophic cirrhosis of the liver in an old syphilitic. The necropsy showed gangrene of the hepatic flexure, extending into the liver, a small liver, and localized peritonitis. No amebic cysts were found after death.

Acute Scleroderma.—Laignel-Lavastine, Coulaud and Largeau report a case of acute generalized scleroderma with severe pains in the joints. Three rabbits injected with the blood of the patient developed bronchopneumonia with tendency to necrosis and changes in the thyroids. A streptococcus was cultivated from the rabbits (not from the patient). It failed, however, to produce lesions in other rabbits.

Contagiousness of Whooping Cough.—Barbier and Renard believe that whooping cough is hardly infectious after three weeks. Such children could be allowed to attend school, but great care should be taken to isolate brothers or sisters, if they have even a slight cough. In one case of typical pertussis they were unable to cultivate the Bordet-Gengou bacillus from the patient. Yet the bacillus grew in pure culture from the pharyngeal mucus of a brother who was coughing but did not have a real attack of the disease.

Sympathicotonia in Tachycardia and Melanoderma.—Gilbert and Coury's patient was a syphilitic with hypertension and mitral insufficiency, who had attacks of paroxysmal tachycardia and marked pigmentation of the skin. They are inclined to attribute both of these symptoms to increased sympathicotonia.

Cervical Myotonia with Plagiocephaly and Craniotabes in Nurslings.—Variot demonstrated four infants with these symptoms. The unilateral myotonia is the cause of plagiocephaly (asymmetric shape of the skull with depression of one parieto-occipital region).

Kala-Azar in France.—Renault, Monier-Vinard and Gendron describe a case of leishmaniasis in a child who recovered after injections of sodium acetyl-para-aminophenylantimonate.

Red Thyroid Spot.—Marañon reports on this sign, which is present in 85 per cent. of cases with hyperthyroidism. Gentle rubbing of the anterior part of the neck provokes in many neurotic subjects a reddening of the skin. In cases with hyperthyroidism this redness is limited or localizes quickly just above the thyroid gland. He discusses the relation of this sign (which he described in 1919) to Lian's local hyperesthesia in hyperthyroidism.

Journal de Chirurgie, Paris

October, 1922, **20**, No. 4

*Remote Sequelae of Cholecystectomy. H. Hartmann and D. Petit-Dutaillis.—p. 349.
*Experimental Study of Omentum Grafts. P. Brocq et al.—p. 358.

Remote Sequelae of Cholecystectomy.—Hartmann and Petit-Dutaillis have reexamined 100 patients long after cholecystectomy, and state that 92 per cent. of this total number were rid of all the disturbances they had been suffering for several years. The relief was immediate or not until after medical treatment following the operation. In one case they were obliged to operate later for a calculus in the common bile duct. This shows the importance of exploring the ducts during cholecystectomy. In more than 8 per cent., appendicitis complicated the cholecystitis, tending to prove that the appendix region also should be examined during cholecystectomy. After the operation, a secondary intervention may be required for adhesions, although it is exceptional; this was required only twice in their 100 cases.

Experimental Study of Omentum Grafts.—Brocq, Ducastaing and Reilly describe a few of the main practical applications of the plastic power of the omentum. They experimented on dogs, sheep, rabbits and guinea-pigs. They chose the bottom of the cecum to apply the graft as this point is easy to find in further operations. It may be premature to draw practical conclusions from their experiments, but one fact seems acquired; namely, that the free omentum graft survives, while preserving its specific character. They believe that they are the first to establish by histologic data this remarkable persistence of the endothelium. Their experimental research demonstrates that we cannot rely very much on the omentum graft to insure that the suture is watertight. However, it is bound to be useful in gastro-duodenal surgery, but the main and great value of the free omentum graft is in prevention of adhesions and to prevent the reforming of adhesions. We can use it wherever operations leave an oozing surface and peritonization is impossible. Pedunculated grafts should not be used, as retraction may occur later and entail stenosis. It is in the treatment of certain forms of pericolitis, with the sticking together of parts of the colon, that the omentum graft is chiefly indicated, especially after correction of a kink bound down by adhesions. All their experiments were on a strictly aseptic basis, and their conclusions do not apply in case of infection.

Nourrisson, Paris

November, 1922, **10**, No. 6

*Inorganic Heart Murmurs in Infants. G. Blechmann.—p. 353.
*Antiscorbutic Power of Different Milks. Lesné and Vaglianos.—p. 377.
*Prophylaxis of Tuberculosis in Infants. R. Dubost et al.—p. 386.
*Maternity House. A. Thierry.—p. 392.
Second Congress of French Pediatrists. H. Lemaire.—p. 398.

Inorganic Murmurs in Infants.—Blechmann reviews the functional murmurs of the heart which are not as rare in young children as it is supposed. After discussing the differential diagnosis, he concludes that time (sometimes a year) is the only safe criterion for diagnosis, if an orthodiagram does not show a distinct organic lesion. Eight cases are described.

Antiscorbutic Power of Different Milks.—Lesné and Vaglianos prepared milk in different ways, and tested its power to prevent scurvy in guinea-pigs. Ten minutes of boiling did not hurt the milk, nor heating below 80 C. after addition of sugar. Pasteurization is also good, but the milk is not completely sterilized. They conclude that the best way to prevent scurvy in infants nourished with sterilized milk consists in the addition of a little orange or lemon juice to the food, beginning from the second month.

Prophylaxis of Tuberculosis in Infants.—Dubost, Blechmann and François describe the remarkable results obtained by the rural center for babes at Mainville-Draveil. This center took care in 1920-1921 of ninety-five infants, thirty-

seven of whom were born from tuberculous parents. The infants are placed in private homes at a maximum distance of 1¼ mile from the center. The nurses are paid 150 francs per month. The daily expenses are from 6 to 7 francs per child. The mortality was 4.3 per cent. in 1921.

Maternity House.—Thierry describes the institution of the maternity house at Tours, with an annex for new-born babes and their mothers. In a village 15 km. from Tours, infants are received without mothers.

Paris Médical

Dec. 2, 1922, **12**, No. 48

Therapeutics in 1922. F. Rathery.—p. 485.
*Local Vaccination. A. Besredka.—p. 496.
Artificial Pneumothorax in Pulmonary Gangrene. Emile-Weil.—p. 500.
*Treatment of Visceral Hemorrhages. P. Carnot and P. Blamoutier.—p. 503.
*Treatment of Streptococcus Infections. A. Mauté.—p. 506.
Present Status of Bismuth Treatment of Syphilis. Emery and Morin.—p. 509.

Local Vaccination.—Besredka examined the mode of action of vaccines. He found that after an intravenous or even a subcutaneous injection of living Shiga bacilli in a rabbit, the organs are sterile, but the bacilli are present in the contents of duodenum and ileum. If killed cultures are injected, we can conclude from the swelling of the mucosa that even dead bacilli are excreted there. Similar experiments were made with living and dead cultures of the typhoid-paratyphoid group and cholera. On account of this affinity for the intestinal wall, we can assume that such vaccines, in part at least, reach the bowels. Consequently it is possible to immunize against these diseases by giving the vaccines by the mouth, although it is necessary to add bile to all, except the Shiga. Such immunity is not associated with the presence of antibodies in the blood. Yet it allows us to assume that, even in the other case, the main factor is the local vaccination of the intestine by the excreted vaccine. Besredka points out that smallpox vaccination is a good precedent. He finds that it will be always advisable to consider the receptive organ of the infection. Results with anthrax were encouraging; plague gives some hopes, and it seems that Malta fever immunity is also local, not humoral. It would be advisable to try the intracutaneous instead of the subcutaneous method in staphylococcus infections. He believes that perhaps opsonins are no more important than other humoral antibodies.

Intravenous Injections of Calcium Chlorid in Treatment of Visceral Hemorrhages.—Carnot and Blamoutier found that intravenous injection of calcium chlorid is superior to oral ingestion in a number of hemorrhagic states.

Treatment of Streptococcus Infections with Cocci Dissolved in Sodium Hydroxid.—Mauté used a vaccine prepared by dissolving streptococci with sodium hydroxid. No results were obtained in ulcerative endocarditis, and more failures than successes in puerperal infections. Good results are reported in lymphangitis, lymphadenitis, purulent pleuritis, erysipelas and chronic tonsillitis.

Presse Médicale, Paris

Dec. 2, 1922, **30**, No. 96

*Carbophosphaturia. A. Martinet.—p. 1037.
Indications for Ouabain and Digitalis in Treatment of Heart Disease. R. Lutembacher.—p. 1038.
*Modern Classification of Nephritis. Wolf.—p. 1040.

Carbophosphaturia.—Martinet discusses the different conditions under which phosphates and carbonates are precipitated in heating unacidified urine. The first group consists of patients with respiratory troubles leading to an excess of carbon dioxid in the blood. This carbon dioxid is neutralized by the alkali of the blood, and is eliminated in this form through the kidneys. The second group are patients with hyperacidity of the stomach, especially if they are vomiting the acid gastric juice. It is clear that this leads to an alkalinosis. A very common reason for the reaction mentioned is alkalinity of the urine. People using carbonates as a remedy, and patients suffering from urinary infections with ammoniacal fermentation, may void turbid urine. Some relation of the pneumogastric nerve to carbophosphaturia is probable. Martinet believes also, that the hyperacidity of the gastric juice may be a reaction of defense against alkalinosis of blood.

Modern Classification of Nephritis.—Wolf reviews the new German clinical and anatomic researches in nephritis.

Revue Médicale de la Suisse Romande, Geneva

November, 1922, **42**, No. 11

*Erythema Nodosum After Delivery. E. Gueissaz.—p. 706.
Pernicious Anemia Due to Bothriocephalus. A. Cramer.—p. 718.
Case of Anemia Due to Bothriocephalus. A. Montandon.—p. 727.
Two Cases of Desquamative Erythroderma. Brun and Perrier.—p. 734.
Two Cases of Lethargic Encephalitis in Nurslings. Perrier.—p. 737.

Erythema Nodosum After Delivery.—Gueissaz describes five cases of erythema nodosum developing shortly after delivery, and recommends that search be made for the porta of infection. Angina precedes the attack quite frequently. The prognosis of idiopathic erythema nodosum is better than of secondary cases (tuberculosis, gonorrhea, syphilis).

Archivio Italiano di Chirurgia, Bologna

November, 1922, **6**, No. 2

*Squamous Epithelioma of Lower Lip. A. Miliani.—p. 105.
*Blocking Splanchnic Nerves. R. Gandusio and G. Pototschnig.—p. 125.
The American Cystoscopes. E. Pirondini.—p. 140.
*Cylindromas. B. Anglesio.—p. 153.
*Traumatic Rupture of Spleen. L. Baccarini.—p. 166.
*Experimental Growth of Bone and Cartilage. B. Polettini.—p. 179.
*Retractile Mesenteritis. R. Falcone.—p. 192.
Appendicectomy in Chronic Colitis. O. Cignozzi.—p. 205.

Epitheliomas of Lower Lip.—Miliani's photomicrograms confirm the view that the granulation tissue represents the highest degree of resistance opposed to the invading growth. He declares that study of the mode of production of this granulation tissue will throw light on the origin and treatment of malignant disease.

Blocking the Splanchnic Nerves for Abdominal Surgery.—Gandusio and Pototschnig have been applying Kappis' method of four injections of 30 or 40 c.c. of a 1 per cent. solution of procain, with a little epinephrin. The details are tabulated from their eighteen cases. A little ether to complete the anesthesia was required in three cases; these were a cancer of the papilla of Vater, a case of supposed gastric ulcer in which the findings were negative, and a case of cancer of the liver and duodenum. In all the others the nerve blocking was a complete success. The list includes several cases of resection of the stomach. The chief benefit of splanchnic anesthesia is seen after the operation. The operative shock is minimal, the local pains slight, the patients free from nausea. The pulse was the same as before the operation. No respiratory complications were observed, but local and regional anesthesia does not guarantee against postoperative pneumonia and bronchitis. They state that the anesthesia obtained by blocking of the splanchnic nerves is so perfect and lasting that the longest and most extensive operations can be performed under it. Several of the operations described took an hour and forty minutes and one, two and a half hours. The splanchnic analgesia was perfect throughout. Kappis' publication on this method of regional anesthesia was summarized here, April 10, 1920, p. 1060.

Cylindromas.—Anglesio found that three so-called cylindromas examined were unmistakably endotheliomas.

Rupture of Spleen.—The boy of 8 had fallen from a tree, and symptoms developed suggesting incipient peritonitis, but the laparotomy revealed only extravasation of blood. Its source could not be discovered although the liver, spleen, etc., were palpated. Necropsy revealed rupture of the spleen with acute hemorrhage. A clot had plugged the crack in the spleen and there was no pain at any time to call attention to the spleen, and no stiffening of the abdominal wall.

Experimental Grafts of Cartilage and Bone.—Polettini reports research on rabbits with subcutaneous and subfascial implantation of scraps of cartilage from the ear or of bone from the scapula. The grafts had all been kept in alcohol or a solution of formaldehyd. The technic was similar to Nageotte's, but the outcome differed widely in the different animals. In some, the implants were partially or totally absorbed, while in others they persisted unchanged, and in

still others (two of the twelve cartilage and four of the nineteen bone implants) there was active proliferation of the cartilage or bone tissue, actual neoformations. These neoformations, however, were never found in direct connection with the implants. The literature on heteroplastic bone formation is reviewed.

Retractile Mesenteritis.—Falcone discusses three cases in which the mesentery had been the seat of inflammatory processes which had entailed diffuse shriveling of the mesentery. This retraction pulled loops of intestines upward and back toward the spine. The viscera are not involved in the inflammatory process of this retractile mesenteritis. In his three cases there was considerable ascites, and in one tuberculous nodules were scattered over the omentum. Nothing could be done in any case, and the abdomen was sutured.

Rivista di Clinica Pediatrica, Florence

October, 1922, **20**, No. 10

*Butter-Flour Mixture in Infant Feeding. A. Gismondi.—p. 577.
*Typhoid in Infants. A. Medi.—p. 597.

Butter-Flour Mixture in Infant Feeding.—Gismondi has very favorable results with the use of Czerny-Kleinschmidt's butter flour pap in infant feeding. It is well tolerated, especially in mixed nursing, acts well in hypotrophic and convalescent infants, and is contraindicated only in acute dyspepsia and diarrhea.

Typhoid in Infants.—Medi believes that the rarity of typhoid infection in the first months of life is due partly to a certain immunity at this stage and the lack of exposure to infection, but partly to the diagnostic difficulties. In cases of congenital typhoid, lesions of the intestine are scarcely ever present, while ulcerations are frequent in typhoid contracted during the first months. The prognosis is not always good.

Brazil-Medico, Rio de Janeiro

Nov. 18, 1922, **2**, No. 46

*The Dangers from Purgatives. A. Pedro.—p. 313.
Biologic Differentiation of Cobras by Precipitins. L. de Assumpcão.—p. 315.
Nutritional Index in Children. E. Meirelles.—p. 318.
Mosquitoes of Matto Grosso; New Species. A. Neiva and C. Pinto.—p. 321.

Nov. 25, 1922, **2**, No. 47

Sarcoma of the Choroid. Abreu Fialho.—p. 329.
Tests of Heart Action in Children and in Hookworm Disease. A. de Almeida Junior and S. B. Pessoa.—p. 331.
Symbionts in Brazilian Ticks. A. Godoy and C. Pinto.—p. 335.
A Case of Mycosis. M. Mourão.—p. 335.
Bismuth in Treatment of Syphilis. M. Krone.—p. 338.

Purgatives.—Pedro remarks that the medical science of the early nineteenth century rested on the tripod, blood-letting, emetics and purgatives. Blood-letting and emetics have fallen from their high estate as panaceas, but the purge is still in high honor. Anybody can give a purgative, and this inherited habit is maintained by physicians. The family sees that the first thing the physician does is to prescribe a purgative. The reaction to the purgative may be severe. Pedro says that he will never forget a case in which he had prescribed a purgative—"like every one else"—and the patient died of heart syncope as the bowels moved. The man might have died without the purge, but Pedro is convinced that it was an important factor in the fatality. In a case of mitral defect, he had always succeeded in tiding the patient through his attacks with heart tonics, but during an absence from town another physician was called in during an attack, and the patient died while the bowels were responding to the purge that had been ordered. In the typhoid group all purgatives are strictly contraindicated. The intestine irritated by the purgative drug absorbs toxins more readily. In Burlureaux' twelve cases of accidental food poisoning, the five treated without purgatives recovered much more rapidly than the others who had been purged. Pedro agrees with those who denounce purgatives in uremia for various reasons, chief among them the fact that the purge reduces diuresis and upsets the balance between the nonprotein and the other nitrogen in the blood and urine. The traditional purge before operations is now omitted by many surgeons, and none, he says, have had reason to regret this action.

Revista Médica del Uruguay, Montevideo

October, 1922, **25**, No. 10

*Acidosis Without Glycosuria. E. Claveaux.—p. 733.
Multiple Lesions in Unrecognized Syphilis. J. May and C. Rodriguez Estevan.—p. 738.
Tuberculous and Cerebrospinal Meningitis. M. Ponce de León.—p. 749.
*Typhoid and Diphtheria. J. P. Urioste.—p. 760.
Depigmentation in Half-Breed. B. Vignale and J. Estapé.—p. 764.

Acidosis without Glycosuria.—Claveaux's patient was a woman, aged 48, with aortic insufficiency, high blood pressure, and retention of chlorids, with tube-casts in the urine and rebellious oliguria. As the oliguria progressed, there was a phase of mental confusion, generalized pruritus, and other symptoms. The urine was hyperacid but there was no glucose or acetone or diacetic acid. After failure of all other measures, sodium bicarbonate treatment was followed by great improvement. Systematic courses, up to 12 gm. of sodium bicarbonate daily, restored comparative health. Now, a year and a half later, the urine is tested with litmus paper, and when it gives an acid reaction, the patient takes the bicarbonate anew; otherwise not. The diuresis increased from 600 gm. to 2.5 liters as soon as 12 gm. of the bicarbonate had been taken.

Typhoid and Diphtheria.—Urioste reports a case of this grave association, which is five times more fatal than typhoid alone. It was frequently observed during the war. Joltrain, examining all the typhoid patients entering the hospital, found that a large proportion were diphtheria bacilli carriers (1 in 35). Even when the diphtheria was recognized promptly and treated with antitoxin, the mortality was three times that of typhoid alone. Urioste recalls Huchard's saying "We find what we look for; we look for what we know about."

Semana Médica, Buenos Aires

Nov. 2, 1922, **2**, No. 44

Biologic Methods in Tuberculosis. G. Aráoz Alfaro.—p. 889.
Angio-Endothelioma of the Ear. J. Layera.—p. 894.
*Rôle of the Maternity. A. Peralta Ramos and J. P. Garrahan.—p. 898.
Appendectomy. E. Matons.—p. 904.
Traumatic Aortic Insufficiency. Emanuel and Roncoroni.—p. 908.
Intra-Uterine Puericulture. V. Delfino.—p. 909.
Vaccines and Serums in Acute Respiratory Diseases. Helmann.—p. 915.
Cough as a Symptom. A. Viton.—p. 916.
Institution for Foundlings. O. L. Bottaro.—p. 918.
Psychophysiologic Tests of the Senses. J. Ramon Beltran.—p. 921.
Illegitimate Maternity. J. A. Beruti and D. Iraeta.—p. 923.
Medicolegal Aspect of Birth Injury. F. A. Deluca.—p. 929.
Experiences with Hydatid Cysts. Calcagno and Collivadino.—p. 932.
Fibroma of Lobule of Ear. C. Jiménez López et al.—p. 934.
Nepiology, the Science of Infant Care. V. Delfino.—p. 935.

Rôle of Maternity Hospitals.—The new Maternity at Buenos Aires is almost ready for inauguration. It adjoins the Rivadavia Hospital and cost over two million pesos. It is designed to include, besides the lying-in hospital, welfare work for mothers and infants, with prenatal and postnatal care and advice. It is equipped with 206 beds for adults and 126 for infants, and has twelve distinct departments. One section is devoted to assistance in the home, and one is entitled the puericulture institute. Every maternity home practices prenatal puericulture, but very few continue the care after birth. This one will give shelter to nursing women, provide a milk station, and social service with trained workers.

Siglo Médico, Madrid

Nov. 11, 1922, **70**, No. 3596

Contraindications to Mineral Waters. H. Rodríguez Pinilla—p. 461.
*Experimental Chorea and Athetosis. G. R. Lafora.—p. 463.
Digestive Derangement in Infants. García del Real.—p. 464.

Nov. 18, 1922, **70**, No. 3597

Traumatic Gangrene. Carrasco.—p. 485. Conc'n No. 3598.
Interpretation of Apical Findings. B. López Durán.—p. 488.
The Sanitary Service in the Morocco Campaign. E. Slocker.—p. 489. Conc'n No. 3598.

Experimental Chorea and Athetosis.—In experiments on twenty-seven cats Lafora drove a needle into the red nucleus, the hypothalamus, or the superior cerebellar peduncle. In twelve of the cats, symptoms of chorea or athetosis developed. Puncture of both lenticular nuclei was not followed by any tendency to chorea or athetosis. Sometimes the movements occurred on the same side as the puncture, and sometimes on the opposite side. Some of the animals developed nystagmus, ophthalmoplegia or more or less transient cere-

bellar syndromes. The movements in some developed soon after the puncture and persisted for two or three days or even for fifteen or twenty days. In others they did not appear till after an interval of a month but then continued indefinitely for months. The exact localization of the extrapyramidal lesions responsible for chorea and athetosis is thus demonstrated by his findings. They harmonize with Kleist's statements as to subcortical centers for movements.

Archiv für Kinderheilkunde, Stuttgart

Nov. 18, 1922, **72**, No. 2

*Nutrition of Children in Orphanages. E. Rost et al.—p. 81.
*Roentgen Examination of Alimentary Tract. I. Buchheim.—p. 100.
*Protein Treatment in Pediatrics. Barabás and Torday.—p. 111.
*Enterogenous Salt Fever. H. Schönfeld.—p. 120.
*Blood Picture in Congenital Syphilis. W. Nitschke.—p. 136.

Nutrition of Children in Orphanages.—Rost, Herbst and Weitzel examined the food and its utilization in fifty boy inmates of an orphanage in Berlin. They found the food sufficient in organic substances and salts. A further addition of calcium did not influence the children.

Roentgen Examination of Alimentary Tract in Children.—Buchheim examined the gastro-intestinal tract of children over 1 year of age. She quotes the literature and publishes her own results in twenty-three cases. The stomach empties, on the average, in two hours, the small intestine in from two to four hours.

Protein Treatment in Pediatrics.—Barabás and Torday put very narrow limits even to a tentative protein treatment in infants.

Enterogenous Salt Fever.—Schönfeld confirms the finding of relative constancy of the level of chlorids in the blood (except after the meal). Ingestion of 3 gm. of salt in 100 c.c. of water caused fever in some infants. The amount of salt in the blood increased immediately before the fever, but some cases with high chloridemia did not have an increased temperature. In some children the salt produced all the symptoms of alimentary dyspepsia.

Blood Picture in Congenital Syphilis.—Nitschke examined the blood of fifty syphilitic children of different ages. The number of erythrocytes and the hemoglobin percentage were normal. There was a slight tendency to an increased number of white corpuscles, especially lymphocytes. The younger forms of neutrophils appeared in a larger proportion than the older forms.

Archiv für klinische Chirurgie, Berlin

Nov. 30, 1922, **122**, No. 1

*Resection of Urethra. N. Petroff.—p. 1.
Appendicular Abscess in Cecum Wall. A. Szenes.—p. 12.
*Access to Subphrenic Abscess. K. Nather.—p. 24.
*Electronarcosis. K. v. Neergaard.—p. 100.
*Spontaneous Healing of Cancer. N. P. Trinkler (Charkoff).—p. 151.
*Sugar Content of Blood During Anesthesia. H. Dewes.—p. 173.
*Volvulus During Pregnancy. E. König.—p. 188.
*Resection of Lesser Curvature. E. Borchers.—p. 198.
*Etiology of Muscular Caput Obstipum. O. Beck.—p. 218.
*The Peripheral Sympathectomy Question. E. Seifert.—p. 248.
*Primary Movable Duodenum. H. Miyake.—p. 269.
Rupture of Pancreas, Stomach and Liver. Recovery. Wildegans.—p. 276.
"Purulent Osteomyelitis of Vertebrae." E. Fraenkel.—p. 280.

Treatment of Cicatricial Strictures and Fistulas in the Urethra.—Petroff remarks that progress in plastic surgery has been one of the reasons why simple resection of the stricture with end-to-end suture of the urethra has been neglected in favor of more complicated operations. They are not needed. The urethral stumps with their encircling spongiosa are easily mobilized to bridge a gap of 6 cm. or more. Successful bridgings of gaps of 8, 12 and even 16 cm. have been published. Diversion of the urine is the first step, and the operation proper should not be attempted until infection has been conquered. Then the stricture or fistula is resected through the perineum, aided by a metal catheter in the proximal stump, which has been introduced through the incision in the bladder. A soft catheter in the distal stump is passed into the bladder as the metal one is drawn back. Petroff gives his experiences with eleven cases, and emphasizes the necessity for refraining from leaving a catheter in the urethra after the stumps have been sutured with fine catgut.

Access to Subphrenic Abscess.—Nather reviews the anatomic conditions which determine the localization of subphrenic abscess. He warns against the liability to overlook the insidious spread of the infection to other spaces than the one first found, and describes the technic for access by an incision over and parallel to the costal arch in front, or by an incision in the back with resection of the twelfth rib. He extols the advantages of these routes, and describes in detail fifteen cases to throw light on the differential diagnosis and the outcome of these operations.

Electronarcosis.—Neergaard reports extensive research on the application of the electric current by Leduc's technic to induce general anesthesia in animals. The narcosis could be maintained for hours; in one case up to nine hours, and ten minutes afterward the dog was eating again. Two of the thirty-five animals died in the course of the narcosis; in the others the narcosis was usually pushed to asphyxia. No attempt was made to apply it to man as the safe limit is too narrow. He recalls, however, that this form of narcosis acts on the most primitive building stones of the organism, and hence for man it seems as if it would be more effectual than in animals. But the experimental basis must be built up more solidly before electronarcosis can be safely tried in the clinic. The numerous advantages of electronarcosis justify further research. The complex factors involved call for systematic concerted action, and he surveys the special lines along which research seems promising.

Spontaneous Cure of Cancer.—Trinkler relates that he applied gastro-enterostomy in two cases of large inoperable cancer of the pylorus with extensive involvement of the lymphatics. One of the patients was a woman physician, aged 43. An excised gland in each showed malignant disease, but the tumors retrogressed and the women have been apparently in good health during the subsequent ten and seven years. He compares with these cases what has been published on spontaneous subsidence of cancer, saying that research on the tissues and organs involved in the organism's fight against malignant disease might reveal means to reenforce the natural defensive forces.

Sugar Content of the Blood During Anesthesia.—Dewes ascribes to the anesthetic alone the slight increase in the glycemia during local anesthesia for extraperitoneal operations. The increase is much higher with laparotomies under local anesthesia or ether—possibly as high as two or four times the normal figure. The factors inducing this are probably complex.

Volvulus in Pregnancy.—König adds another case to the five on record in which the small intestine had become twisted in the course of gestation. The sigmoid colon was involved in sixteen of the total twenty-eight instances on record of volvulus occurring in the pregnant. In his case the woman died twenty hours after the laparotomy. The volvulus had evidently been induced by a mesenteric cyst. The entire small intestine was involved.

Resection of the Lesser Curvature of the Stomach.—Borchers analyzes the effect on the shape and motor function of the stomach after lengthwise or doorstep resection of this portion of the organ. All of the seven patients thus treated have been freed from their former symptoms. The group includes one case of a small scirrhous carcinoma of the pylorus.

Muscular Torticollis. — Beck rejects all the theories advanced to explain this anomaly. He ascribes it to a congenital deformity of the muscle.

Periarterial Sympathectomy. — Seifert applied Leriche's method of peripheral sympathectomy without much benefit in a case of traumatic injury of the hands with suspicion of syringomyelia. The improvement afterward was slight although the changes induced at first were striking. In a case of trophoneurosis in a man, aged 35, the immediate and persisting benefit was pronounced, both subjectively and objectively. Reports as to the durability of the improvement are contradictory. Possibly a difference in the technic may be responsible for this diversity in the outcome. He describes two cases in which trophic disturbances followed the severing

of the femoral or popliteal artery and immediate suture of the stumps. The periarterial sympathetic fibers had evidently been injured and trophic disturbances followed. The conditions were thus exactly the reverse of the intentional periarterial sympathectomy to cure trophic disturbances. He declares that besides the mustard test, the blood pressure, and test hyperemia below a constricting band, we must examine the capillary circulation with the microscope and also the histologic findings, as further functional tests. The cases of gangrene after ligation of arteries should be revised from this standpoint of injury of periarterial sympathetic fibers. His final conclusion is the need for caution in operating on arteries.

Primary Movable Duodenum.—Miyake describes ten cases of colic for which a primary, abnormally movable duodenum was responsible—"a new clinical picture." He says that the immediate and durable cure by fastening the duodenum in its normal place has confirmed the correctness of his assumptions and procedure.

Beiträge zur klinischen Chirurgie, Tübingen

1922, **127**, No. 2

*Diagnosis of Knee Disease. E. Bircher.—p. 239.
*Reaction of Bone to Mechanical Influences. W. Müller.—p. 251.
*Blood Pressure During Operations. A. Lehrnbecher.—p. 291.
*Perforation of Ulcer on Rear Wall of Stomach. W. Cloos.—p. 331.
*Pathogenesis of Chronic Duodenal Ulcer. C. Rohde.—p. 340.
*Postoperative Peptic Ulcer. H. Erckenbrecht.—p. 365.
*Perforation of Gallbladder. F. C. Hilgenberg.—p. 399.
Inflammatory Tumor in Abdominal Wall. F. Schankies.—p. 405.
*To Lengthen Spermatic Cord. Welti.—p. 410.
*Operation for Exstrophy of Bladder. E. Brattström.—p. 419.
*Fracture of Neck of Femur. C. E. Jancke.—p. 422.
Rotation of Leg with Hip Disease. Kehl.—p. 438.
Irritation from Aluminum Acetate. W. Speck.—p. 445.
Operative Treatment of Radial Paralysis. V. Dumpert.—p. 457.
Isolated Rupture of Pancreas from Contusion. A. Nast-Kolb.—p. 462.
Intramuscular Lipoma. A. Nast-Kolb.—p. 465.
*Chronic Perienteritis. A. Lehrnbecher.—p. 468.

Diagnosis of Injury of Semilunar Cartilage.—Bircher comments on the misleading findings with roentgenography of the knee by the usual technic. In a series of 68 operative cases there were signs of arthritis deformans in 20 when reexamined later. In 41 the joint had been known to be free from inflammatory processes before the operation. In 15 cases a fragment of the outer condyle was chipped off for examination, and the microscope revealed inflammation in 70 per cent. of the cases in which the roentgen ray showed only normal conditions. Bircher then applied to the knee Jakobæus' laparoscope, after injecting oxygen or nitrogen into the joint by the artificial pneumothorax technic. This procedure is harmless and extremely effectual, he says, and reveals conditions inside the joint with precision. In 20 cases thus examined, the diagnosis was confirmed by the operation in 8 of the 9 cases of laceration of a semilunar cartilage; with arthritis in 3 of 4 cases, and with osteochondritis in one case. The operation confirmed the diagnosis further in a case each of serous gonitis, a loose body, a tuberculous process or a villous body. The suspicion of tuberculosis was disproved in one case. His experiments on the cadaver seem to show that this method of endoscopy cannot be applied to any of the other large joints, but for the knee it promises to become as indispensable as cystoscopy for the bladder.

Modification of Structure of Bone Under Mechanical Strain.—Müller cut out a segment of the radius in animals, thus throwing unusual mechanical strain on the ulna. Typical changes in structure developed, corresponding to the roentgen ray findings in coxa vara, genu varum and genu valgum.

Blood Pressure During Operations.—Lehrnbecher had the blood pressure taken repeatedly before, during and for a day or two after operations. A total of 320 patients were thus examined. He asserts that the control of the blood pressure during an operation is the control of life itself. The lowering of the blood pressure is the very earliest sign of collapse and shock, and gives warning before there is any other sign of danger. The blood pressure directly after the operation is of little moment for the prognosis, but the pressure in the evening and the next morning tells whether the forces are rallying or the vitality is ebbing. The work issues from Burkhardt's service; he is an advocate of intravenous anesthesia, especially for operations on the head and neck. The blood pressure record is said to demonstrate the good analeptic action of this form of anesthesia. He makes a practice of testing the functional capacity of the heart before the operation when feasible. Among the measures for this is walking up a flight of stairs. A physician accompanies the patient, ready to arrest the test at the slightest sign of overdoing. The Katzenstein method was abandoned as the patients did not like the application of the constricting band to their legs, and this made its influence felt on the blood pressure. In 40 patients tested with the stair climbing, the findings corresponded to what was anticipated from the clinical picture in all but nine. The effect of digitalis is not instructive, as the healthy and the practically hopeless cases respond alike. The same may be said of saline infusion in diffuse peritonitis. The exposure of the vein may excite the patient and cause a misleading rise in the blood pressure.

Perforation of Ulcer on Rear Wall of Stomach.—Cloos quotes Boas' recent statement that he has had only three cases of perforation of a gastric ulcer in all his extensive experience. In Cloos' service at Stuttgart there have been twenty-six cases during the last ten years. Perforation of an ulcer in the posterior wall occurred in one case, the woman aged 53 having been apparently healthy for the preceding ten years, after a period of stomach disturbance. Symptoms suggesting ileus then appeared suddenly, but subsided under medical measures. Then an abscess developed in the lumbar region but its source was not ascertained until profuse bleeding occurred from both the bowel and the abscess. This was interpreted as from perforation of an ulcer in the posterior wall of the stomach, which was confirmed at necropsy, the woman succumbing to a second hemorrhage from the same source the day after. If it had been possible to discover the perforation earlier and to suture it and drain the abscess, the fatal outcome might have been averted. The perforation might possibly have been utilized for a posterior gastroenterostomy.

Pathogenesis of Chronic Duodenal Ulcer.—Rohde has been investigating this subject on the cadaver, supported in an upright position. This has shown that certain organs press on the duodenum, compress its wall at these points, and thus expose the mucosa to various mechanical injuries, and to corrosion from the action of the digestive juices. The duodenal ulcer is a local lesion. This is true also of gastric ulcer and of certain gallstone disturbances. Mechanical, anatomic and functional factors combine alike in all these three affections.

Postoperative Peptic Ulcer.—Erckenbrecht cites Denk's compilation in 1920 of 309 authentic cases of postoperative peptic ulcer in the jejunum, and adds thirteen new cases to the list, all in men between 18 and 60. He comments on this preponderance of males in all compilations of cases of peptic ulcer. His material confirms the connection between ulcers close to the pylorus and peptic ulcers; some even deny that a peptic ulcer can develop after an operation for an ulcer remote from the pylorus. Some primary injury of the jejunum wall undergoes corrosion from the digestive juices, and a peptic ulcer is the result. Resection of the stomach, by reducing production of gastric juice, has a prophylactic influence, but even this is not infallible: In one of the thirteen cases tabulated, the peptic ulcer followed resection of one half of the stomach. The main thing is not to injure the wall of the jejunum during the operation, and to regulate the diet afterward to keep production of gastric juice at a minimum. The food must be thoroughly chewed; milk must be taken in abundance; and meat, and food with much waste must be proscribed.

Perforation of the Gallbladder.—Only 4 of 30 patients with perforation of the gallbladder were men; the others were women from 19 to 69 years old. The experiences with this material teach the necessity for early operation in gallstone disease, instead of waiting until the gallbladder and bile ducts have become so diseased that operation is difficult. In only one case did grave peritonitis follow the perforation. The symptoms in this case did not appear till ten days after the contusion entailing the perforation. In 20 cases preexisting adhesions had walled off the perforation area. In

23 cases the gallbladder was removed; in the others the subjects were too much debilitated to permit this radical procedure. Seven of the patients died, including 4 of the 10 with diffuse peritonitis.

To Lengthen the Spermatic Cord with Undescended Testicle.—Welti has applied Sievers' method in thirteen cases. The spermatic cord is drawn through the obturator foramen. This lengthens the cord in an adult by fully 7.5 cm. The first incision is as for inguinal hernia, and the foramen is reached from here after the spermatic cord has been thoroughly loosened up. Then a second incision is made in the thigh, to reach the foramen from outside, the 10 cm. incision extending from the spine of the os pubis outward. The adductor longus and the gracilis are separated and also the fibers of the adductor brevis. Through the breach thus made, forceps are introduced and are worked through the obturator foramen. The testicle is then drawn through the foramen. Sievers commends this technic not only for undescended testicles but also for the complete suture of the inguinal canal in cases of inveterate hernia. The only drawback is that the spermatic artery and the veins of the pampiniform plexus have to be severed. This does not seem to have any serious consequences. Otherwise the results are apparently perfect. This operation seems to ward off the tendency to malignant degeneration of ectopic testicles.

Exstrophy of the Bladder.—Brattström reports the application of the Maydl operation as modified by Borelius in three of five cases of exstrophy of the bladder. One boy aged 14 was cured, continence being perfect. A girl infant died on the day of the operation. One boy aged 2½ years at the time of the operation (1920), shows satisfactory condition. All the urine is voided through the rectum, and continence is perfect during the day, but not at night.

Fracture of Neck of Femur.—Jancke states that recent reexamination of fifteen patients who had been under treatment for fracture close to the head of the femur showed extremely good results. The extension treatment had been followed by restoration to full earning capacity; advanced age rendered the prognosis a little less favorable. In the total of fractures of the neck of the femur—76 women and 47 men—66 per cent. were left with a usable hip joint. Extension prevents adduction contracture and outward rotation; the rest of the joint retains its function.

Chronic Perienteritis. — Lehrnbecher reports cases of *Zuckergussdarm* in which the necropsy findings were the same though the clinical pictures had been different. The patients were a girl aged 21 and a man aged 46. The former had presented symptoms for three years which simulated gastric ulcer. The man's symptoms for ten years had suggested stenosis of the bowel. This is the first known instance of the condition having been diagnosed during life. On the old chronic affection with adhesions there suddenly developed an acute phase, with a tumor in the left side which could be nothing else than a clump of bowel loops welded together. Tubercle bacilli were found in the first case but nothing was discovered to explain the condition in the other.

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*Physical Chemistry of Blood Sedimentation. Höber and Mond.—p. 2412.
*The Antagonists in Voluntary Movements. K. Wachholder.—p. 2414.
*Early Prognosis of Poliomyelitic Paralysis. P. Erlacher.—p. 2415.
Bárány's Cerebellar Localization. B. Fischer.—p. 2417.
*Relation of Pneumonia to Influenza. G. Elkeles.—p. 2421.
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Duties and Limits of Medical Welfare Work for Infants and Children. T. Hoffa.—p. 2436.
Clotting of Blood. B. Stuber.—p. 2440. Cont'd.

Significance of Liver in the Circulation.—Hess emphasizes the importance of the liver as an organ, which protects the right heart from congestion.

Physical Chemistry of Blood Sedimentation.—Höber and Mond confirm and continue Fåhræus' investigations on blood sedimentation. The negative charge of the corpuscles is comparatively great in a solution of serum albumin, smaller in serum globulin, and smallest in fibrinogen. In pregnancy and other conditions with increased speed of sedimentation, more globulins than usual are adsorbed to the corpuscles. The hydrogen ion concentration in which the tendency of globulins to flocculate is maximal (isoelectric point of globulins), lies near that of the blood. Therefore their adsorption to the corpuscles makes the suspension less stable, than is the case with albumins. The influence of globulins is also partly due to their greater viscosity, which causes the corpuscles to cling together.

Rôle of Antagonists in Voluntary Movements of Man.—Wachholder concludes from electromyograms, that antagonists are not passive, though this does not mean that there could be no inhibitory impulses.

Direct Test for Prognosis in Poliomyelitic Paralysis of Muscles.—Erlacher introduces needles into the muscle, and determines the strength of faradic current necessary to induce a contraction. He concludes from his small number of tests, that cases which do not lose more than two thirds of the normal irritability during the first months, have a good prognosis.

Relations of Pneumonia to Influenza.—Elkeles finds that statistics do not point to any etiologic relation between influenza and lobar pneumonias occurring during epidemics of influenza. No influenza bacilli are found in the parenchyma of the lungs in these cases, though they are always present in typical lobular pneumonias of influenza. Experiments on animals show also fundamental differences.

Treatment of Central Luxation of Hip Joint.—Wassertrüdinger reports two favorable results obtained by extension with Steinmann's nail driven into the femur.

Symptom-Free Children of Syphilitic Mothers.—Patschke recommends treatment even if the babies have no symptoms. One may individualize if the mother has only a positive Wassermann reaction without other symptoms.

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*Roentgen Rays in Gynecologic Diagnosis. O. Polano and C. Dietl.—p. 1621.
Histologic Physiology of the Stomach Glands. F. Groebbels.—p. 1622.
Heredity of Morbid Agents in Insects. W. H. Hoffmann.—p. 1623.
*Abortive Treatment of Syphilis. W. Bruck.—p. 1624.
*Lumbar Anesthesia. Seyffardt.—p. 1625.
Attack of Malaria Provoked by Arsphenamin. Wesener.—p. 1626.
Serology of Cantharidin Blister Fluid. Thomas and Arnold.—p. 1627.
*Pregnancy in Leukemia. E. Hausam.—p. 1627.
Apparatus for Saturation of Fluids with Gases. Quetsch.—p. 1629.
Nomenclature in the Science of the Constitution. M. Vogel.—p. 1631.
Talents and Assiduity in Pupils. Rheins.—p. 1634.
Treatment of Enuresis in Children. Rietschel.—p. 1635.
Financial Distress of Tuberculosis Sanatoriums. C. Schelenz.—p. 1636.

Roentgen Rays and Pneumoperitoneum in Gynecologic Diagnosis.—Polano and Dietl find that a combination of roentgen rays with pneumoperitoneum is very valuable in the diagnosis of diseases of the pelvis. They describe the precautions which are necessary for good results.

Abortive Treatment of Syphilis.—Bruck finds it necessary to apply at least three series of neo-arsphenamin and mercury treatments, separated by from six to eight weeks, in cases of primary syphilis with negative Wassermann reaction.

Lumbar Intraspinal Anesthesia.—Seyffardt finds that it is harmful to remove spinal fluid before the injection.

Pregnancy in Leukemia.—Hausam reports a case of pregnancy in the fourth year of a myelogenous leukemia. Although there was a history of torpid hemorrhages after extraction of teeth, there was no abnormal bleeding from the uterus after delivery. During the pregnancy the patient felt very well, but died shortly after delivery. The child is so far (15 months) perfectly normal.